

# PACIFIC SEABIRDS



A Publication of the Pacific Seabird Group

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# PACIFIC SEABIRD GROUP

Dedicated to the Study and Conservation of Pacific Seabirds  
and Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 due to the need for better communication among Pacific seabird researchers. PSG provides a forum for the research activities of its members, promotes the conservation of seabirds, and informs members and the public of issues relating to Pacific Ocean seabirds and their environment. PSG members include research scientists, conservation professionals, and members of the public from all parts of the Pacific Ocean. The group also welcomes seabird professionals and enthusiasts in other parts of the world. PSG holds annual meetings at which scientific papers and symposia are presented; abstracts for meetings are published on our web site. The group is active in promoting conservation of seabirds, including seabird/fisheries interactions, monitoring of seabird populations, seabird restoration following oil spills, establishment of seabird sanctuaries, and endangered species. Policy statements are issued on conservation issues of critical importance. PSG's journals are *Pacific Seabirds* (formerly the *PSG Bulletin*) and *Marine Ornithology*. Other publications include symposium volumes and technical reports; these are listed near the back of this issue. PSG is a member of the International Union for Conservation of Nature (IUCN), the Ornithological Council, and the American Bird Conservancy. Annual dues for membership are \$30 (individual and family); \$24 (student, undergraduate and graduate); and \$900 (Life Membership, payable in five \$180 installments). Dues are payable to the Treasurer; see the PSG web site or the Membership Order Form next to inside back cover.

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The Pacific Seabird Group is a nonprofit organization incorporated under the laws of the State of California. Contributions to the Pacific Seabird Group are tax deductible to the fullest extent allowed US law (IRS Section 501[c][3]).

## *Pacific Seabirds*

This journal publishes short peer-reviewed articles, reports of ongoing work, conservation news, and other items of importance to conservation of seabirds in the Pacific Ocean. The journal is published twice a year in spring and fall. Materials should be submitted to the Editor, except that conservation-related material should be submitted to the Associate Editor for Conservation. Information for contributors to *Pacific Seabirds* is published in each Fall issue and is on PSG's web site. Editorial policies accord with any that may be adopted by PSG's Executive Council; in all other matters the journal aims for an unbiased point of view. Back issues of the *PSG Bulletin* and *Pacific Seabirds* are posted on the group's web site or may be ordered from the treasurer (see Membership/Order Form next to inside back cover for details). Submission deadlines are 20 March for the spring issue and 1 October for the fall issue; manuscripts may be submitted at any time.

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## *Marine Ornithology*

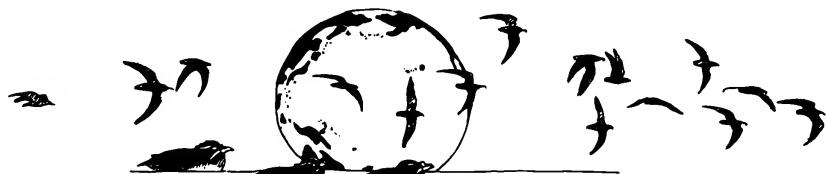
*Marine Ornithology* presents peer-reviewed contributions concerning international seabird science and conservation. The journal is published two times a year. It is available on its web site or by subscription. The journal is supported by a partnership of global seabird societies, including the Pacific Seabird Group (PSG), African Seabird Group, Australasian Seabird Group, the Seabird Group (UK), Dutch Seabird Group, and Japan Seabird Group. For further information see [www.marineornithology.org](http://www.marineornithology.org)

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## A Publication of the Pacific Seabird Group



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Volume 39	2012	Number 2
Editor's Corner .....		54
<b>Article</b>		
Kleptoparasitism by Forster's Tern on California Least Tern. By David L. Riensche, et al. .....		55
<b>Reports of Corresponding Members</b>		
Bycatch in one of the largest fisheries in the world: the industrial anchovy fishery case. Liliana Ayala. ....		57
Seabird conservation and monitoring on Isla la Plata and Isla el Muerto in Ecuador. Carlos A. Valle .....		58
Seabird work in the eastern tropical Pacific: Malpelo Island, Colombia, and the Galapagos Islands, Ecuador. ....		
Felipe A. Estela .....		59
News from Malpelo Island. Mateo López-Victoria .....		60
<b>Forum</b>		
World Seabird Union: Formation, aims, and progress. David B. Irons and John P. Croxall .....		62
Seabird Organizations. W.R.P. Bourne .....		65
Note to PSG members about Dr. W.R.P. Bourne. Patricia Baird .....		66
The power of service. Linda Leeman .....		66
<b>How PSG Runs</b>		
The Craig S. Harrison Conservation Fund for Small Grants. Vivian Mendenhall, Verena Gill, and Malcolm Coulter .....		67
Corresponding Members Committee. Vivian Mendenhall and Malcolm Coulter .....		68
PSG's travel awards to Annual Meetings: For scientists from outside North America, as well as students. ....		
Patricia Baird .....		69
<b>Conservation Report</b> .....		71
<b>Meeting News</b>		
PSG's 2013 Annual Meeting, Portland, Oregon .....		77
2014 Annual Meeting, Juneau, Alaska .....		77
<b>Executive Council minutes: Summary for meeting of 15 May 2012</b> .....		78
<b>Regional Reports</b>		
Alaska .....		79
Canada .....		82
Washington and Oregon .....		86
Northern California .....		90
Southern California .....		93
Hawaii .....		95
Latin America .....		96
Eastern Asia .....		97

## Table of Contents, continued

### Regional Reports, continued

Non-Pacific United States .....	97
Europe and Africa .....	100
Oceania and South Atlantic Ocean .....	100

### General Information

Information on the Pacific Seabird Group .....	Inside Front Cover
Information for Contributors to <i>Pacific Seabirds</i> .....	103
Publications of the Pacific Seabird Group .....	105
PSG Committee Coordinators .....	107
PSG Life Members and Recipients of Awards .....	108
Membership Application and Order Form .....	109
PSG Executive Council for 2012 .....	Inside Back Cover

## MALCOLM C. COULTER

With great regret, PSG announces the death of Malcolm C. Coulter on 2 January 2013, at his home in Chocorua, New Hampshire.

Malcolm was internationally known for his work on seabirds, as well as on storks and ibises. He contributed greatly to PSG as Chair, editor of the *PSG Bulletin* (forerunner of *Pacific Seabirds*), and coordinator of the Corresponding Members Committee. Malcolm was to have received PSG's Lifetime Achievement Award at the 2013 Annual Meeting, and it will be bestowed posthumously. He mentored many scientists, some of them overseas from Colombia to China. A full appreciation of Malcolm's life and achievements will be published in the Spring 2013 issue of *Pacific Seabirds*.

With Malcolm's help, this issue of *Pacific Seabirds* includes information on the Corresponding Members' Committee and reports from Corresponding Members. This issue is dedicated to Malcolm.

## EDITOR'S CORNER

**Vivian Mendenhall**

The "Forum" section in this issue of *Pacific Seabirds* continues two debates that have occupied PSG members for the past year. In the Spring issue of 2012, Malcolm Coulter and Craig Harrison asked whether a new seabird group—specifically the World Seabird Union—is needed (*Pacific Seabirds* 39[1]:10). David Irons and John Croxall were invited to respond with a Forum column of their own, and it appears on page 62 of this issue. Soon after their column was submitted, a second on the same topic arrived from Bill Bourne, a longtime PSG member and organizer of an earlier seabird group. Since some PSG members may not know Bill, Pat Baird has added a perspective on his viewpoint.

The final column in this "Forum" section, by Linda Leeman, concerns the reasons that people serve on a board of directors. Everyone on PSG's board (the Executive Council) wants to help PSG. However, there has been debate during the past year about the obligations of board members (e.g., *Pacific Seabirds* 38[1-2]:4-12, 2011). At a workshop for the Executive Council in Portland just before the 2013 Annual Meeting, members will spend several hours reviewing their duties and responsibilities with the help of an expert facilitator. The Executive Council is updating its procedures and fiscal controls, because PSG has grown greatly since it was founded by a group of friends in 1972, having morphed into an international organization with complex finances. Leeman describes the sense of dedication that kept her going as president of a Wildlife Society chapter.

The following section, "How PSG Runs," contains three articles on our important support for our overseas members—small grants for conservation-related research and educational work; travel awards for overseas scientists and students (as well as for North American students, of course); and Corresponding Membership for scientists from developing countries. Four reports from Corresponding Members illustrate the benefits of our assistance for scientists and for seabird conservation.

# ARTICLE

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## KLEPTOPARASITISM BY FORSTER'S TERN ON CALIFORNIA LEAST TERN

David L. Riensche, Sharan Dulava, Emily Brownlee, Douglas A. Bell, Sam High, Mark Schynert, David Wiley, Steve Wiley, and Linda Vallee

Aerial “piracy” or “kleptoparasitism” can be defined as the harassment of one bird species by another in order to force the victim to give up its food. Seabird species engaging in this behavior often obtain a significant portion of their diet through kleptoparasitism (see references in Brockman and Barnard 1979, Furness 1987, Schnell et al. 1983), and tern species are frequently kleptoparasitized (see references in Quintana and Yorio 1999). This note provides information about the first published account of kleptoparasitism on the California Least Tern (*Sternula antillarum browni*) in the northern limits of its range by the Forster's Tern (*Sterna forsteri*).

The East Bay Regional Park District manages island nesting habitat for the California Least Tern at the Hayward Regional Shoreline ( $37^{\circ} 37' 47''$  N,  $122^{\circ} 8' 46''$  W), on the eastern shore of San Francisco Bay, California. Approximately 300 m southwest of the California Least Tern colony is a recently established Forster's Tern colony that had 210, 614 and 128 breeding pairs in 2009, 2010 and 2011 respectively. The California Least Tern colony is relatively stable and had 70, 53, and 73 breeding pairs during this same time period. At this site, California Least Terns forage over the tidal marshes and bay waters west of their colony, returning to feed their young in view of the nearby Forster's terns. Least Terns carry a single prey item back to their chicks in their bills, and the prey is clearly visible to other birds.

During the 2010 breeding season, we witnessed an adult Forster's Tern that nested on the adjacent island repeatedly harass adult California Least Terns transporting fish back to their young. We made ten observations from 1230 to 1500 on July 19 through July 22, 2010. During low and outgoing tides the Forster's

Terns repeatedly flew towards, chased, and attempted to steal fish from the bills of California Least Terns, by diving on the terns and trying to grasp the fish. Eight of the pirated Least Terns were adults and two were fledglings.

Chases were initiated when a California Least Tern apparently detected an approaching Forster's Tern and tried to avoid harassment, typically by flying in the opposite direction. Each time, there were looping and dodging aerial chases, with mean chase times of  $20\text{ s} \pm 10\text{ SE}$  and a mean chase distance of  $150\text{ m} \pm 50\text{ SE}$ . The range of chase time was 10 s to 5 min, and the longest linear chase distance was 550 m. Adult California Least Terns were forced to drop their fish on two occasions; the fish were then recovered by the attacking Forster's Tern. One of these successful kleptoparasitism events occurred during the longest chase. During the two other successful chases, which involved California Least Tern fledglings, the latter were forced to dive into the water and give up their fish.

The Common Tern (*Sterna hirundo*) has been reported to kleptoparasitize Least Terns (*Sternula antillarum antillarum*) flying to colonies in Massachusetts (Thompson et al. 1997). During the breeding season, interspecific kleptoparasitism may result in negative effects on host species due to the reduction of food availability to chicks, time and energy spent avoiding parasitism, and loss of prey (see references in Quintana and Yorio 1999). Due to the limitations of our research, no attempt was made to mark the kleptoparasitized California Least Terns or record their nest associations. The effect of kleptoparasitism on the survival of California Least Terns has not been investigated.

There is no record of kleptoparasitism by Forster's Terns reported in the

literature (McNicholl et al. 2001). The profitability of stealing by a Forster's Tern is likely related to the sizes of prey procured by the California Least Tern. While there is generally a slight overlap in prey size selection between these two species (Thompson et al. 1997, McNicholl et al. 2001), there can be quite a bit of overlap in both prey species and size taken at locations where these two species breed together (Robinette 2003). For example, Robinette (2003) reported in a two-year study at Bolsa Chica, California, that breeding Forster's Terns had a more diverse diet than sympatrically breeding California Least Terns, while California Least Terns breeding at other sites in the absence of Forster's Terns had a more diverse diet, indicating that Forster's Tern may have influenced the diet of nesting California Least Terns where they co-occurred.

In multi-species seabird colonies, it was reported that prey quality (prey type and size) triggered kleptoparasitism (Garcia et al. 2010). Our observations may be a density-dependent response resulting from the high number of nesting Forster's Terns in 2010, a density that was not seen in other years. At our site, no kleptoparasitism events were observed in 2009 or 2011. It is interesting to note that at Naval Base Ventura County Point Mugu, California, biologists also observed increased Forster's Tern kleptoparasitism behavior towards California Least Terns as the Forster's Tern population increased from 150 pairs in 2010 to approximately 300 pairs in 2011 (M. Raune, pers. comm.). To our knowledge, and based on conversations with other tern biologists, this is the first reported account documenting kleptoparasitism by Forster's Terns on California Least Terns. The impact, if any, on California Least Tern reproductive

## ARTICLE • Tern kleptoparasitism

success when nesting in close proximity with Forster's Terns exhibiting such behavior is unknown. We encourage further information gathering to improve our knowledge of both kleptoparasitism and overall competition at breeding sites where these two related colonial species co-occur. Study designs that compare diet and reproductive success at California Least Tern colonies in the presence and absence of Forster's Terns will likely contribute to their future conservation and management.

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**David L. Riensche, Sharon Dulava, Emily Brownlee, and Douglas A. Bell**

# REPORTS OF CORRESPONDING MEMBERS

Corresponding members provide occasional reports on their research or conservation activities.

## BYCATCH IN ONE OF THE LARGEST FISHERIES IN THE WORLD: THE INDUSTRIAL ANCHOVY FISHERY CASE

Liliana Ayala

The Humboldt Current System off Peru is one of the most productive coastal upwelling systems in the world (Carr 2002). A key species in this marine ecosystem, Anchovy *Engraulis ringens* (Pauly 1987, Pauly and Tsukayama 1987, Muck 1989) is also the main species captured in the fisheries.

Bycatch can have important consequences for the demography of affected populations (Reeves et al. 2003) and endanger the existence of some species (Agrosa et al. 2000). There is a growing recognition of the conservation significance of these interactions (Read et al. 2006). In Peru, numerous marine birds, likely guano producing birds, were reported being killed in purse seine nets used to fish anchovies during the height of the anchovy fishmeal industry in the late 1960s (Jordan and Fuentes 1966), but this was never quantified (Duffy et al. 1984).

In order to know the effects of the fishery on top predators, it is important to monitor the Peruvian Anchovy fishery. This is one of the largest fisheries in the world (Bouchon et al., 2000); however I am unaware of any published report of bycatch in this kind of fishery. Bycatch reports usually refer to the artisanal fishery in Peru (Van Waerebeek 1997, Majluf et al. 2001, Jahncke et al. 2001, Awkerman et al. 2006, Alfaro-Shigueto et al. 2007, Ayala et al. 2008, Mangel et al. 2010).

Researchers from Peruvian Association for the Conservation of Nature (APECO), supported by Environmental Research and Conservation (CERC) and

Idea Wild, are developing the project: Interactions between marine wildlife and the industrial anchovy fishing fleet. In this project, we board observers onto vessels and conduct surveys with fishermen. Fifty-nine fishermen from industrial vessels were interviewed in 2009; 54% of them mentioned seabird bycatch. Fishermen mentioned Boobies *Sula* spp. (42.5%), Blue-footed Boobies *Sula nebouxii* (20%), Gulls (Laridae) (15%), Guanay Cormorants *Phalacrocorax bougainvilli* (10%), Peruvian Pelicans *Pelecanus thagus* (7.5%), and Peruvian Boobies *Sula variegata* (5%).

Also, 54% of fishermen mentioned bycatch of cetaceans: Dusky Dolphin *Lagenorhynchus obscurus* (48%), Common Bottlenose Dolphin *Tursiops truncatus* (48%), and *Delphinus* spp. (4%); 64% of fishermen mentioned bycatch of Southern sea lion, *Otaria flavescens*.

Almost 60% of fishermen know that some species captured are threatened. They mentioned endangered dolphins, sea lions and turtles. No one mentioned seabirds, although all birds that fishermen mentioned as caught are threatened according to Peruvian law (Supreme Decree 034-2004 AG).

When we asked about the future of the anchovy fishery, three of each four fishermen are very pessimistic (it would disappear, it will be critical and it is uncertain). Two of each three fishers suggested some measures to avoid bycatch: use of divers to help animals, sensitizing fishermen to avoid setting nets in feeding areas of top predators, use of techniques that avoid bycatch, cull of sea lions, and

finally, they suggested that top predators are future prey for fishermen and for that reason it is important to care for them. Fishermen commented that nowadays some species are commercial; ten years ago the same species were not commercial; probably it will happen with marine mammals, turtles, and birds.

In order to know the magnitude of bycatch in that fishery, and to propose some mitigation measures to diminish the probable impacts, it will be necessary to monitor the fleet and involve the industrial companies in the process. Companies need this kind of information and should implement mitigation measures to obtain some certifications of their products. However, the process is beginning and we expect to collaborate with it.

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**SEABIRD CONSERVATION AND MONITORING ON ISLA LA PLATA AND ISLA EL MUERTO IN ECUADOR**

**Carlos A. Valle**

Besides the Galapagos, in Ecuador there are two islands along the continental coast where seabirds reproduce in large numbers. At Isla La Plata (area: 14 km<sup>2</sup>; 01° 16' S, 81° 03' W), about 30 km from the coast, breed six seabirds, including the Galapagos Waved Albatross (*Phoebastria irrorata*), Magnificent Frigatebird (*Fregata magnificens*), Nazca Booby (*Sula granti*), Blue-footed Booby (*S. nebouxii*), Red-footed Booby (*S. sula*), and Red-billed Tropicbird (*Phaethon aethereus*). During the last two decades, the size of some of these

seabird colonies has been assessed by ornithologists during short and sporadic visits, using different field methods and criteria. Isla El Muerto is 43 km from the coast (area: 5 ha; 3° 10' 22" S, 80° 26' 10" W); although frequently visited by fishermen from Ecuador and Peru, it remained inaccessible to local ornithologists. Records on seabirds of this island by Murphy (1936), who visited the island in early 1925, were the only accounts until I visited island in 1997 and 1998. Isla El Muerto, now declared a wildlife refuge, has been recognized as the most

important seabird breeding ground of mainland Ecuador.

Seabirds at these two islands currently face several threats, both on their breeding grounds and at sea in their foraging areas. At Isla La Plata, feral cats (*Felis silvestris*) and goats (*Capra hircus*) were recently eradicated, but black rats (*Rattus rattus*) subsequently experienced a population burst, apparently owing to the combined effect of a superabundance of seeds following a season of heavy rain, together with the removal of the introduced goats (grazers)

and cats (predators). Little information is available about threats at sea for these birds, because their foraging grounds have not been yet established, nor has the impact of fishermen been quantified. The potential for a large impact from fishing on seabirds nesting at Isla La Plata is high, however, since this island is on the way for the large Ecuadorian industrial fishing fleet and is at the core of the artisanal fishing grounds.

Isla El Muerto has no introduced predators, although the presence of black rats cannot be certainly ruled out. The main threats for seabirds nesting here are likely to be at sea. The island is at the core of the southern Ecuador artisanal and industrial fishing areas and very close to a gas drilling station. Furthermore, chemical pollution due to runoff coming from the extensive banana plantations is likely, but the subject remains to be studied. Tissue samples and egg collection for DNA and chemical analyses are urgently needed.

The seabird monitoring program we started at Isla La Plata and Isla El Muerto (with Equilibrio Azul, a local conservation foundation), and the work I conducted at Isla El Muerto 14 years ago, aim to settle the basis for a long-term monitoring program of seabird populations at these two Ecuadorian continental islands. We monitored the breeding phenology and populations of seabirds monthly, starting last year, on Isla La Plata, we and banded several hundred Nazca Boobies and Blue-footed Boobies. Preliminary results suggest that these populations remain about the same when compared with those of previous years. However, reproductive success was remarkably low for both the closely monitored species. Isla El Muerto showed a similar pattern to that found at Isla La Plata, but the island was visited only twice. At Isla La Plata, there is a need to start monitoring all species, including the Red-billed Tropicbird, which nests inside inaccessible burrows

on cliffs, and whose monitoring will demand the use of special gear and skills for climbing the hills. Isla El Muerto has a sedimentary non-compacted soil with a heavy rate of erosion; future monitoring should include the changes of the shape and size of the island, as well as seabird diseases, pollutants, and assessment of the birds' foraging grounds and interaction with fisheries.

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## SEABIRD WORK IN THE EASTERN TROPICAL PACIFIC: MALPEO ISLAND, COLOMBIA, AND THE GALAPAGOS ISLANDS, ECUADOR

Felipe A. Estela

My PhD research at Wake Forest University, under the supervision of Dr. David J. Anderson, has focused on the effects of the foraging behavior of the Nazca Booby (*Sula granti*) on its evolution and ecology. Specific topics have included the genetic structure of this species, senescence, and the connectivity of populations. I am also working as a member of Calidris, a Colombian NGO that works primarily in the conservation and study of water birds. The project is being carried out in three different colonies of the Eastern tropical Pacific: Malpelo Island in Colombia, and La Plata and Española Islands, Galápagos, Ecuador. Field work was conducted over

the last four years, and I expect to finish my PhD in 2013.

It was a great and unique experience travelling to Nazca Booby colonies. During this time I had the opportunity to enrich my knowledge of seabirds of this region, in addition to interacting with several local marine ornithologists. During field trips I also had the chance to work with and provide training to seven field assistants, all young biologists eager to learn about seabirds and marine ecosystem conservation.

In the last couple of years I have authored and coauthored several publications related to seabirds of the tropical Pacific region. The most relevant are a comparative phylogeographic analysis

between Brown Boobies (*Sula leucogaster*) and Red-footed Boobies (*S. sula*) (Morris-Pocock et al. 2010), and the first description of overnight flights by Nazca Boobies (*Sula granti*) and associated predation risks of this behavior (Zavalaga et al. 2012). Additionally, in 2010, I participated as editor of a special issue of Boletín SAO (a small Colombian ornithological journal), on the state of knowledge concerning seabirds in Colombia. This issue has seven papers; I am author of a detailed analysis on seabird studies in Colombia across the last century (Estela et al. 2010a), as well as the record of a new species, Westland Petrel (*Procellaria westlandica*), for the country (Estela and Garcia-Imhoff

2010). Finally, I published a short field guide on the birds of one locality on the Colombian Caribbean coast (Estela et al. 2010b). Although this last publication is not on Pacific marine birds, the locality has one of the best-preserved mangrove forests in northern South America, and it is very important for seabird populations, including the Gull-billed Tern (*Gelochelidon nilotica*), Tropical Cormorant (*Phalacrocorax brasilianus*), and Magnificent Frigatebird (*Fregata magnificens*).

In January 2012 I attended an international workshop organized by BirdLife International in Gamboa, Panamá, with the aim to identify the Marine Important Bird Areas (Marine IBAs) of Mesoamerica. It was a meeting with experts from nine countries, and more than 30

new marine areas were proposed for the region, many of which were included in the Marine E-atlas launched online in October 2012 by BirdLife International (available at <http://54.247.127.44/marineIBAs/default.html>).

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## NEWS FROM MALPELO ISLAND

Mateo López-Victoria

This year we are completing eight years of continuous research on the ecology of seabirds inhabiting the volcanic island of Malpelo, located more than 380 km from the Pacific coast of Colombia. Our periodic travels to the island—about four per year, 30 to 40 hours each way—also have given us the chance to record valuable information on the presence and distribution of seabirds on Colombian waters. To date, our limited resources and efforts have given us the opportunity to produce more than twenty papers on seabirds dealing with different topics, three undergraduate theses, and one PhD Dissertation (at Justus-Liebig University, Germany); another is currently in progress. Particular interest has been placed on the ecology of the Nazca Booby (*Sula granti*), whose biggest breeding colony occurs on Malpelo. The importance of this species for the terrestrial system of the island has been the main goal of my

investigations, while some aspects of its evolutionary ecology have been the main interest of my colleague F.A. Estela, currently a PhD Student at D.J. Anderson's Lab at Wake Forest University.

The small surface area of Malpelo Island, about 1.2 km<sup>2</sup>, and the almost complete absence of vascular plants (i.e. local primary producers) make the terrestrial system of the island highly dependent on allochthonous inputs, provided by the sea, via seabirds. Our preliminary findings suggest that at least 170 t of materials—in form of excrements, chicks, eggs and carcasses—enter the system during the highest point of the breeding season. These inputs are directly or indirectly used as a food source by three endemic lizards, the endemic land crab, and by more than 80 other invertebrate species of smaller size. The breeding seasons of almost all terrestrial organisms inhabiting Malpelo seem to be coupled

with that of the seabirds, reinforcing the idea of high dependence. New recently collected data were integrated to previous findings in order to build a food web model of the terrestrial system of Malpelo. This work was part of a post-doc project from the cooperation agreement between the Justus-Liebig University and the Marine and Coastal Research Institute (INVEMAR), Colombia.

Our efforts, and the growing interest on seabirds in Colombia during the last decade, led us to produce one Special Issue of the *Boletín SAO* (a Colombian journal dedicated to ornithology), published in December 2010. It includes first records for Colombian waters (both in the Pacific and Caribbean), and papers on the breeding ecology and diet of selected seabirds. The Special Issue also includes the first historical, integrated analysis on research and publications produced on Colombian seabirds, covering 110 years

since the first contribution (Figure 1). This first Colombian publication entirely dedicated to seabirds is a good reflection of the growing interest in this bird group, and we hope we can publish a second issue by the middle of 2013. The most encouraging aspect of all our efforts is the increasing number of young researchers interested in doing their undergraduate and master theses on seabirds or related topics, which gives us the opportunity to expand our activities to other Colombian islands, in both the Pacific and the Caribbean Sea. In my case, particular attention will be given to the importance of seabird colonies for the support of isolated terrestrial systems.

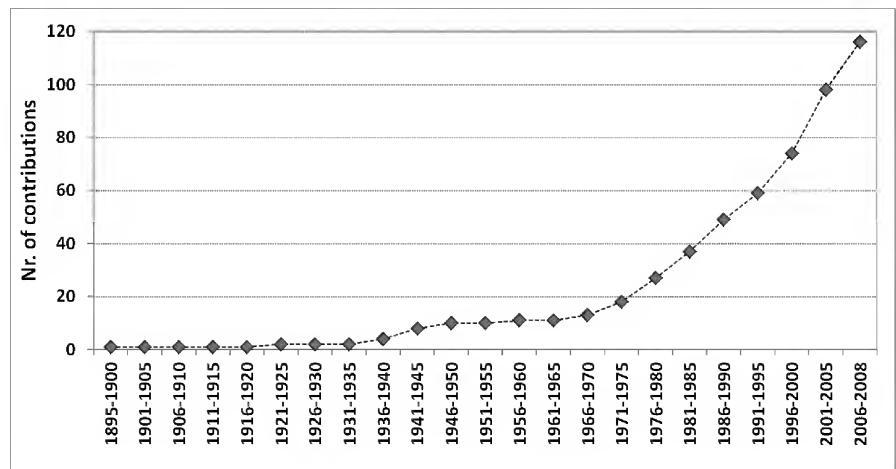


FIGURE 1. Accumulated number of contributions (published papers or unpublished reports and theses) related to seabirds in Colombia, from the first paper until the end of 2008. Graphic from *Boletin SAO* with kind permission from the Editors.

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# FORUM

*Pacific Seabirds* welcomes submission of opinion columns on seabirds and related topics. The authors are expressing their opinions, which may not be PSG's or the Editor's. Forum contributions are not edited for content; however, they may be edited for clarity and format (see "Information for Contributors.")

## WORLD SEABIRD UNION: FORMATION, AIMS, AND PROGRESS

David B. Irons and John P. Croxall

In the last issue of *Pacific Seabirds*, Malcolm Coulter and Craig Harrison wrote an opinion piece entitled "Why does the world need another seabird group?" (Coulter and Harrison 2012). Despite extensive discussions held at the PSG meeting of February 2012 with regard to the World Seabird Union (WSU), and numerous responses to Coulter and Harrison (2012) posted on the PSG List-serve, it appears that there is still a need to clarify some misconceptions about the WSU, its formation, and its purpose. Therefore, instead of providing a specific response to Coulter and Harrison (2012), the representatives of the 20 member organizations of the WSU decided that it would be more constructive to clarify details on the formation and purpose of WSU. This paper is a brief summary of: (a) how the WSU was formed; (b) what its objectives are; and (c) what has been accomplished so far towards addressing these aims. We hope that readers of *Pacific Seabirds* will find this helpful and informative.

We should emphasize that the World Seabird Union is a new organization that is made up of representatives of member organizations, which is designed to facilitate collaboration on scientific and conservation issues that affect seabirds at the global level. It is intended to complement and will not replace regional seabird organizations, such as the Pacific Seabird Group; it provides a forum for collaboration between researchers working on similar issues in all the world's oceans. We appreciate the concerns expressed by Coulter and Harrison (2012), but we hope members of all seabird organizations will support the World Seabird Union while they continue

to participate in the successful operations and activities of the groups represented in this new organization.

### BACKGROUND AND ESTABLISHMENT OF THE WORLD SEABIRD UNION

The World Seabird Conference (WSC) was held in Victoria, British Columbia, Canada in September 2010. It was organized by an International Steering Committee (ISC), which consisted of 24 scientists who came from 14 countries and represented 26 organizations. During 2009, in the early stages of planning for the WSC, the ISC indicated that one of the main objectives of the WSC should be to hold discussions on establishing and improving access to information and data on seabirds globally, and facilitating the use of these data. Towards this important objective, part of the WSC program was dedicated to a series of workshops, later entitled Legacy Workshops. The aim of these workshops and their potential role in the establishment of a global seabird organization was set out in the abstracts for the workshops (see Appendix 1), which were widely circulated and publicly available well in advance of the WSC.

The outcomes of these workshop sessions were summarized during the WSC's closing plenary (11 September 2010). A transition team (the World Seabird Union Transition Team; WSU-TT) was set up to establish the objectives and mode of operation of a global seabird committee. The transition team has held quarterly meetings since WSC. All agendas, papers, and minutes relating to these meetings are freely accessible on the WSU website, [www.seabirds.net](http://www.seabirds.net).

The transition team agreed that the global seabird committee should be called the World Seabird Union, that it should be established as a legally constituted organization governed by a board of directors, and that it should be a tax-exempt non-profit corporation, for instance under clause 501(c)(3) of the US tax code. The World Seabird Union was formed as an umbrella organization and is made up of a representative and an alternate from each organization interested and active in seabird conservation and research.

### OBJECTIVES OF THE WSU

1. Ensure mechanisms are in place to hold World Seabird Conferences at appropriate intervals.

2. Establish and develop effective communications between existing seabird organizations and researchers.

3. As feasible, establish a global initiative to develop a system of seabird status and trends indices.

4. As feasible, establish mechanisms to facilitate develop and manage global seabird database networks.

5. Facilitate the development of seabird initiatives benefiting from global and/or regional coordination/interaction.

### Progress with WSU initiatives

#### 1. FUTURE WORLD SEABIRD CONFERENCES

The WSU-TT, with support from De Armond Management Ltd (the team responsible for the management of the WSC), sent a questionnaire concerning any future WSC to all who attended and who originally expressed interest in the 2010 WSC. The responses indicated

overwhelming support for holding a second WSC. Key aspects of the responses were:

(a) Fully representative response, with 524 replies in total, comprising 52% full attendees, 23% students and 23% non-attendees. Of seabird group members, there were responses from members of all those which sponsored WSC, with most from the Pacific Seabird Group (171), The Waterbird Group (71) and the Seabird Group (61); there were 158 responses from those who are member of no seabird group.

(b) For year of the next WSC, no clear preference between 2013 (35%), 2014 (26%), 2015 (37%). Similarly, advice on frequency was almost equally split between intervals of 3 years (25%), 4 years (30%), and 5 years (25%).

Several initial expressions of interest have been received, and the relevant WSU committee is in correspondence with some of these parties with a view to selecting hosts and venue for another WSC, probably in 2015.

## 2. COMMUNICATIONS.

The organizational committee for [www.seabirds.net](http://www.seabirds.net) has been working in the last year to improve and develop the current website. Since the 2010 WSC, the seabirds.net committee has put together a work plan for the website, and an approximate timetable (the plan can be seen at [seabirds.net](http://seabirds.net)). The website was created *pro-bono* by Grant Humphries. Upon receiving funding for development of seabirds.net, the committee contracted with Dragonfly Science Ltd. in Wellington, New Zealand to put the technical infrastructure in place for the website. The updated and “final” version of the website was uploaded in August 2012 and is currently active.

The creation of a seabird personnel database (PETREL) was a high priority. This database was launched in August 2012 as the flagship feature of seabirds.net. The directory will eventually be linked to a number of the databases that will be accessed through seabirds.net. PETREL acts as a communication tool for seabird scientists around the world by facilitating the search for

contact information, and through the ability to post discussions and news to the global forum. Further, the forum will be directly linked to social media sites such as Facebook and Twitter in order to better communicate to a wider audience. Seabirds.net is also a hub for links to seabird databases (the Seabird Information Network), and to WSU member organizations’ websites from around the world. Future plans for the website include the creation of an online seabird bibliography, a seabird job search (technician positions, volunteer field work, graduate and post-doctoral positions), internationalization of the website (translations into multiple languages, including French, Spanish, Portuguese, Japanese, Mandarin, and Russian), and creation of a WSU “News Network” of individuals who would report news on the website from various parts of the world.

## 3. DATABASES AND RELATED INITIATIVES

**3.1 Global seabird colony register**—The WSU-TT agreed that it was appropriate to move forward with this database. It would initially use the data entry fields, and the rules of access and use that were recently implemented for the Circumpolar Seabird Colony Register, which was developed by the Conservation of Arctic Flora and Fauna (CAFF) on behalf of the Arctic Council. The WSU-TT agreed to proceed by entering and soliciting data for areas complementary to those covered by CAFF (and by other existing major regional seabird colony databases). A compilation of appropriate source data has been prepared. In addition, agreement in principle has been reached with BirdLife International that seabird data for sites that qualify as Important Bird Areas (some 3000 worldwide) would be available for, and/or linked to, the WSU database after BirdLife launches its global marine IBA inventory in October 2012.

The global colony register can also help identify gaps in global seabird knowledge, and it could thus encourage collection or submission of data for colonies that do not have recent records.

It will help local conservation organizations identify sites of global importance that need to be protected, monitored, or managed. It will provide a standard for information that allows organizations in the most remote corners of the oceans to identify interesting sites and to know what data they should collect and manage. While such database skills and know-how are widespread in North America and Europe, the global seabird colony register will also facilitate communication about well-known colonies that have active monitoring regimes in different oceans, so we can compare how populations are doing using the same methodology.

### 3.2 Population and productivity indices

—As with the colony register, the WSU-TT agreed that it was appropriate to move forward with this, initially using the data entry fields and the rules of access and use that were recently implemented for the Circumpolar Seabird Colony Register, as mentioned above. It was agreed to proceed by entering and soliciting data for areas complementary to those covered by CAFF.

### 3.3 Seabird monitoring database

—The WSU is sponsoring the work of a 17-member Regional Coordinating Committee that has been tasked with development and implementation of a World Seabird Monitoring Database (WSMD), modeled initially on the data-entry fields and the rules of access and use that were implemented in the Pacific Seabird Monitoring Database (PSMD) of the Pacific Seabird Group. During 2011, the committee undertook code revisions of the PSMD web application to make it suitable as an online pilot version of the WSMD. Programming and deployment of the WSMD online will be completed during 2012, followed by efforts by committee members to solicit data entry on a regional basis. In parallel with its initiative for a world database of seabird monitoring results, the Regional Coordinating Committee is building a database of seabird monitoring efforts,

past and present, regardless of whether or when there is a commitment to enter the resulting data into the WSMD.

**3.4 Seabirds at sea database**—Advice on the desired next steps to enhanced links between existing databases of seabird records at sea is still awaited from the working group that was established at WSC.

**3.5 Seabird tracking data**—At the WSC workshop it was agreed to investigate developing interoperability between databases for tracking of seabirds. The goal is that, should data be stored in one database and not the others, links between the databases could allow easy access to tracking data from any of the relevant databases.

There was subsequent discussion on the technological issues surrounding sharing of metadata between databases. The result was an agreed format for sharing data, and an example system to test it was set up by Movebank (an international online database for tracking animal movements). The system works well, and each of the other websites has been able to read from it. In March 2011, representatives from Movebank, BirdLife International, and OBIS-SEAMAP met in Hobart, Tasmania, during the Biologging IV Conference, to discuss the next steps and various technical issues. (OBIS-SEAMAP is the Ocean Biogeographic Information System Spatial Ecological Analysis of Megavertebrate Populations.

Development of the user interface to read the data has been slow, however, due to resource constraints.

Work is ongoing to complete the sharing of metadata, but despite the fact that interoperability has yet to be fully resolved, each database has grown substantially on its own, and each is continuing to improve independent access to tracking data.

**3.6 Mortality events**—Beached-bird surveys within Europe are centered on strandings of Northern Fulmars (*Fulmarus glacialis*) and Common Guillemots (*Uria aalge*). The former species

serves as an indicator of the widespread use and discharges of user plastics into the marine environment); the latter is an indicator of the risks imposed by chronic oil pollution. Most countries around the North Sea have comprehensive beached-bird surveys, and many other countries provide more incidental data. All stranded seabirds and marine mammals are generally recorded. Some recent attempts have aimed at using strandings data to highlight the incidence of bycatch in fishing gear. So far, the proposed merge or exchange of data with other continents (as proposed at the first World Seabird Conference) has not materialized.

A valuable perspective on database goals of the WSU is also given by Hatch (2010). Scott Hatch, along with many other PSG members, developed the Pacific Seabird Monitoring Database. Hatch feels strongly about archiving of data, and this paper gives his views on how data sharing and collaboration could be managed at the global scale. His ideas have provided important guidance to the WSU.

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## APPENDIX 1: Titles and abstracts of two workshops held at the 1<sup>st</sup> World Seabird Conference to explore the idea of a world seabird governing body.

### *Introduction to the aims of the global seabird legacy workshops* (8 September 2010)

*Conveners:* David Irons (US Fish & Wildlife Service) and John Croxall (BirdLife International)

*Abstract:* A main objective of the WSC is to generate better communication and collaboration between seabird researchers and organizations worldwide. We hope to do this by: a) facilitating improved interaction between existing seabird groups by establishing a

formal coalition of relevant bodies and a web-based communication system, and b) establishing better opportunities and systems for assembling and linking appropriate data on seabirds. This series of workshops has been organized to discuss these objectives and the best ways of addressing them. This recognizes that many aspects of effective research and conservation of seabirds would be greatly enhanced by the ability to link and analyze data at regional and global scales. It is also important to enhance input of seabird data to current initiatives such as ocean health, climate change and marine biodiversity, which will require improved coordination of existing data and more effective links to data and databases on marine systems generally. In these workshops, we will review opportunities such as seabird monitoring (including colony registers), seabirds as indicators, at-sea distribution of seabirds and mechanisms to enhance collaboration and cooperation among scientists and seabird groups.

### *World Seabird Governing Committee* (9 September 2010)

*Conveners:* John Croxall (BirdLife International), Pat Jodice (U.S. Geological Survey and Clemson University), Kees Camphuysen (Royal Netherlands Institute for Sea Research), and David Irons (U.S. Fish & Wildlife Service)

*Abstract:* The purpose of this meeting is to determine whether there is interest in creating a permanent world seabird committee that would: a) ensure the next World Seabird Conference happens; b) establish effective communication between existing seabird groups (and/or broader seabird community), via a global seabird web portal; c) oversee the development of initiatives benefiting from global and /or regional coordination/interaction. If there is sufficient interest in a world seabird committee then it would need to establish, at this Seabird Conference, the basis for an appropriate governance structure and some key sub-committees, e.g.: a) WSC Committee: responsible for selecting host/venue for next WSC and then be-

## FORUM • World Seabird Union

coming/handing over to an appropriate Steering Committee and Local Organising Committee; b) Communications Committee: responsible for establishing effective and efficient communication between existing seabird groups (and/or broader seabird community) via a global seabird web portal ( It will likely require a permanent dedicated resource

to achieve this) ; c) Database Committee: responsible for establishing mechanisms to develop and manage a system of global seabird database networks, including development of appropriate seabird indices. (This will also have significant resource requirements).

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## SEABIRD ORGANIZATIONS

**W.R.P. Bourne**

While my presence as organizer of the world's first Seabird Group did not appear to be required at the World Seabird Conference, the World Seabird Union, which was proposed there and which has been commented on by Malcolm Coulter and Craig Harrison (*Pacific Seabirds* 39[1]:10-12), surely deserves consideration in the light of general past experience.

The first Seabird Group was formed to meet a need for better organization of investigations and conservation. As with the first major seabird observations during Captain Cook's voyages in the eighteenth century, the first thing revealed was a need for financial support for analysis of the results. Since then, support has repeatedly been raised to initiate large investigations, such as study of the distribution of birds at sea around Britain, or the Smithsonian's Pacific

Ocean Biological Survey Program and the Alaskan Outer Continental Shelf Environmental Assessment Program (OCSEAP) in America—only for them to collapse under the weight of their results when the support was discontinued.

While the excess profits from the World Seabird Conference may serve to initiate a World Seabird Union, they are unlikely to maintain it for long, and in view of past experience with governments, they are unlikely to be any good for sustained support either. If the proposed organization is to last, it will probably be necessary to raise an army of subscribers to support it. Is the present organization capable of this?

Then when it comes to observations, initially we found that the first necessity is to secure uniformity of technique to make the data compatible, and then (like Captain Cook's crew) we found that we

had inadequate data processing, communication, and publishing facilities. These things are now easier to secure, but again there is a need to be sure that they remain available. There is also a need to incorporate a variety of past observations that are likely to be of historical value, which will need careful organization and a great deal of uninspiring labor. I am sitting on a good deal of past data myself, and when I am unlikely to last much longer, what can I do with it (or with my library)? There is a need to develop facilities to handle such things; but can the proliferating bureaucracy revealed in the 2011 report of the World Seabird Union handle them?

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**NOTE TO PSG MEMBERS ABOUT DR. W.R.P. BOURNE**

**Patricia Baird**

The author of the above Forum column, "Seabird Organizations," Dr. Bill Bourne, is one of the leading seabird biologists in the United Kingdom (UK). He received a Lifetime Achievement Award from PSG in 1997 for helping to found PSG (along with Jim Bartonek and Jim King), back in 1972. His LAA acceptance speech is still being talked about by those lucky enough to have attended the 1997 Portland meeting. (You can read it in *Pacific Seabirds* 24[2]:54-56, 1997.)

Dr. Bourne completed his pre-clinical medical studies at Cambridge University. After this he spent a spare year studying zoology, and was later invited to do a D.Phil. in that subject at Oxford; he says these zoology studies "met with little success." Be that as it may, his combination of skills was to give a tremendous boost to his seabird career. In 1966, Dr. Bourne organized the UK's seabird group, the first in the world

(hence its name, *the Seabird Group*). In his words, the group's purpose was "to obtain more information at home for comparison with observations by the Royal Naval Birdwatching Society abroad."

Bill's efforts led to a grant to study birds at sea around the UK, during which time he was a research fellow at Aberdeen University. When his grant ran out, he became an honorary faculty member there. He next got a job as ship's surgeon with the Royal Fleet Auxiliary, which supplies the Royal Navy. This allowed him to roam far and wide across many seas, including the South Atlantic and Indian Ocean, places that were not common for most seabird biologists to visit. His published accounts of seabirds in these parts of the world were some of the first truly detailed scientific writings about them. He also collated observations of the Royal Naval Birdwatching Society covering about 40 years.

Dr. Bourne has contributed a great deal to the world of seabirds. Besides PSG's award, he has received the Stamford Raffles award of the Zoological Society of London for distinguished amateur contributions. Throughout his career, he has always encouraged younger students on their paths as seabird biologists, and he has been a good mentor to many. He is now retired from the University of Aberdeen and continues to be active in the seabird arena.

Regarding the first sentence of Dr. Bourne's column, above: without his knowledge, some members of PSG asked the organizers of the first World Seabird Conference to provide Dr. Bourne with a travel award to attend the conference, based on his status as founder of the world's first seabird group, his long history with PSG, and his myriad contributions to PSG. The organizers did not choose to fulfill the request, and therefore Dr. Bourne did not attend the WSC.

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**THE POWER OF SERVICE**

**Linda Leeman**

*"No time is better spent than that spent in the service of your fellow man."* — Bryant H. McGill

Recently I have been thinking about the power of service. Service can come in many forms—big grand gestures, small quiet deeds, and everything in between. It can be a onetime shot, like holding the door open for a stranger, or require long-term dedication and commitment, like being a mentor.

The power of service is that, while the intent may be to assist others, we also end up benefiting ourselves in the process. We do acts of service every day, many times without even realizing. We may not seek praise or recognition for these acts, but it makes us feel good. Service can help us understand our values, give us a sense of pride and purpose, and enhance our skills. I am feeling this keenly now as I am wrapping up my year as President and can begin to reflect on

the experience. Was it a lot of work? Yes. Was it worth it? YES! I have a deeper appreciation of our collective power as wildlife professionals and our ability to shape conservation issues and priorities. I have learned about leadership and organization, how to build consensus, and how to value differing opinions. Plus it has been great fun to get to know wildlife professionals working in all sorts of capacities throughout our area. I am grateful for this opportunity to serve the Western Section.

Service is essential to the functioning of The Western Section of The Wildlife Society. Indeed, our organization only exists because volunteers are willing to serve on the board, donate their time and talents, and share their knowledge and expertise. Our organization provides professional development, mentoring, and networking opportunities. We host technical workshops, annual conferences, and social mixers. We provide

scholarships and travel grants, mentoring for students, and a vast network of professionals, with whom you can enrich your professional life.

I am amazed by the commitment to service shown by Western Section board members and volunteers.

This service shows our passion for our profession and our commitment to helping others. There are many ways to be involved—in big, small, long-term, or short-term ways. I urge you to think about what you can contribute and to consider giving back to your profession. What does it mean to you to be of service to others?

**Linda Leeman** is president of the Western Section of The Wildlife Society. The column is reprinted with permission, from the *Winter Newsletter of The Western Section of The Wildlife Society* 57(3):1, 2012. Received 20 December 2012.

# HOW PSG RUNS

“How PSG Runs” is an occasional section on important activities of the group that may be unknown to many members. In this issue we focus on PSG’s liaison and assistance to overseas members: small grants for conservation-related work, the Corresponding Members Committee, and travel awards for scientists (as well as for students) to attend PSG meetings.

## THE CRAIG S. HARRISON CONSERVATION FUND FOR SMALL GRANTS

Vivian Mendenhall, Verena Gill, and Malcolm Coulter

The Pacific Seabird Group offers small grants for seabird conservation projects in developing nations of the Pacific Ocean and adjacent regions. PSG encourages any eligible scientist within this region with such a project to apply for a grant.

### BACKGROUND

Over the years, the PSG Executive Council (EXCO) and the PSG Conservation Committee have been concerned that worthy conservation projects for Pacific seabirds are not being pursued, because there has been no source of funding for some parts of the world. This has been true even though many projects could be accomplished for minimal cost. The need for better support of seabird conservation is greatest in developing nations. Many years ago it was pointed out that “[T]he 30th study on the Black-legged Kittiwake in Alaska can find a sponsor, but the first attempt at mapping colonies in Fiji or Indonesia cannot” [*PSG Bulletin* 9(2):83, 1982].

This same concern still existed in 2007, when EXCO established the Craig S. Harrison Conservation Fund for small grants (Conservation Fund).

The objective of the Conservation Fund is to advance conservation and restoration of Pacific seabirds by supporting projects in countries that are within or adjacent to the Pacific Ocean. The fund is intended to provide funds or supplies to scientists in developing countries. Scientists who are based elsewhere, but who are working in those countries, are also eligible to be considered for grants. Another major goal is to develop seabird

expertise among residents of developing Pacific countries (scientists, technicians, and volunteers).

The Conservation Fund is managed by a committee, the Craig S. Harrison Conservation Fund Committee. [*Editor’s note:* PSG’s Conservation Committee is a different group, which prepares PSG’s public comments about seabird conservation problems.]

The first coordinator of the Conservation Fund Committee was Robert Day. Bob guided the group in developing procedures and guidelines for awarding grants. The committee’s current Coordinator is Verena Gill; other members include Louise Blight, Malcolm Coulter, Dave Duffy, Shannon Fitzgerald, Doug Forsell, Craig Harrison, Bill Henry, Ken Morgan, Mark Rauzon, and Melanie Steinkamp.

### PROJECTS THAT HAVE RECEIVED GRANTS FROM THE CONSERVATION FUND

Projects for which Conservation Fund grants have been awarded include: assessment of threats to seabirds from commercial fisheries; assessment of at-sea and colony threats; colony restoration, including eradication of rats; and public education for fishers, tourists, and/or local residents (including printing of posters and booklets). Several projects have also trained local residents to continue the work.

Projects in 6 nations have received grants so far, including Chile (2 grants), Ecuador (1), Fiji (2), Guatemala (2), Indonesia (2), and Peru (4). The committee hopes that scientists in other nations will also apply for grants in the near future.

Seabirds that have already benefited from Conservation Fund grants include penguins, albatrosses, shearwaters, petrels, fulmars, diving-petrels, jaegers, skuas, pelicans, boobies, gulls, and terns. Without doubt, additional species have also benefited. Full reports on Conservation Fund projects are posted on PSG’s website ([www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org); select the “Grants” tab at top of home page, then scroll down to “Award Recipients.”)

The Conservation Fund Committee usually awards grants between \$250 and \$2,000 (all amounts are in US dollars). A grant could theoretically exceed \$2,000, but this would require direct approval by EXCO, which could delay the final decision. The total of grants awarded in each year is determined by the number of proposals, the quality of each proposal, the contribution of the proposed work to Pacific seabird conservation, and the availability of funds. Thirteen grants have been awarded from 2007 through November 2012.

### GRANT REQUIREMENTS

PSG encourages and welcomes an application for a Conservation Fund grant from any seabird scientist in a developing Pacific nation. Examples of projects that meet the requirements for a grant are listed above (“Projects for which Conservation Fund grants have been awarded . . .”).

Some types of seabird projects cannot receive a grant from the Conservation Fund. These include: regular monitoring or censusing of colonies; research that includes the purchase of satellite- or

## HOW PSG RUNS • Small Grants Fund

radio-telemetry tags; the study of breeding biology; and any project that is not wholly focused on seabirds of the Pacific Ocean or adjacent areas. There are many other good projects that deserve funding, but which the Conservation Fund cannot accommodate. Scientists with projects on other species, or in other regions of the world, may consult suggestions about potential sources of money on the “Grants” page of PSG’s website.

Conservation Fund grants also cannot be used for travel to regular society conferences, including PSG’s Annual Meetings. (However, students and non-North American scientists may apply for a Travel Award to attend an Annual Meeting of PSG; please see the accompanying article, “Travel Awards.”)

### APPLICATION PROCESS

To apply for a Conservation Fund grant, a person should first send a “pre-

proposal” to Verena Gill and Craig Harrison. (Their contact information is on PSG’s website). The pre-proposal is a brief explanation of the project and its location. The committee will then determine quickly whether the project is eligible to be considered for funding. If it is eligible, Gill and Harrison will request a full application, a description of the project, a budget, and one or more letters of reference. PSG’s website gives full information on applying for a Conservation Fund grant, including an application form; go to [www.pacificseabirds.org](http://www.pacificseabirds.org), and select “Grants” from the top menu bar.

There is one additional requirement for a grant: each recipient is expected to provide a short report to the Conservation Fund Committee, no later than 2 months following the completion of their work under the grant. Reports on past projects are posted on PSG’s website, as mentioned above.

### SOURCE OF FUNDS

The Conservation Fund receives most of its money from donations. Although the grants are of modest size, so is the Fund; it needs to receive money each year. PSG members are encouraged to donate any amount they wish (even \$10 helps). Options for donating are provided on PSG’s home website page and on the web pages for membership renewal and meeting registration; donations can be specified for the Conservation Fund.

Other sources of money are sporadic: the Conservation Fund Committee seeks grants from charitable foundations, and the Executive Council has transferred money to the Fund every few years. However, especially in the current economic climate, it is PSG members themselves who are primarily assisting their fellow scientists around the Pacific. This seems appropriate.

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## CORRESPONDING MEMBERS COMMITTEE

**Vivian Mendenhall and Malcolm Coulter**

The Pacific Seabird Group would like to foster communication with people who are interested in seabird research or management throughout the world. Of course, anyone may join PSG and thereby communicate with other members via the Listserv, by submitting reports or manuscripts to *Pacific Seabirds*, or by attending our Annual Meetings.

However, PSG recognizes that membership fees may be a hardship for students and professionals in those parts of the world where there is little institutional support for seabird conservation. The Corresponding Members Committee therefore offers up to sixteen supported memberships in PSG, primarily to foster ties with seabird researchers and conservationists

in developing countries. Corresponding members do not pay a membership fee.

In return for membership support, each corresponding member is asked to contribute a short report to *Pacific Seabirds* at least once every three years, summarizing some aspect of seabird research or conservation in his or her region. The reports are extremely informative for PSG members—we gain a better understanding of seabird populations and their problems in other regions, and we become aware of the hard work being devoted to seabirds in many countries. (Four Corresponding Members’ reports appear in this issue.)

The Corresponding Members Committee reviews applications for Corresponding Membership. Anyone can apply to be a corresponding

member. The committee also welcomes suggestions from anyone in PSG about potential new Corresponding Members. The committee reviews the current list of corresponding members periodically, to ensure that everyone is complying with the guidelines for PSG support (primarily that they are submitting occasional reports to *Pacific Seabirds*). Current members of the Corresponding Members Committee are Melanie Steinkamp (Chair), John Piatt, Jessica Hardesty, and Malcolm Coulter.

Most Corresponding Members join as individuals, but a few are included primarily to foster PSG’s communication with distant seabird groups. Current corresponding members are: Liliana Ayala (Peru), Cao Lei (China), Felipe Estrela (Colombia),

## HOW PSG RUNS • Corresponding Members Committee

Matthieu LeCorre (Reunion Island, France; PSG's liaison with the Indian Ocean Seabird Group), Mateo Lopez-Victoria (Colombia), Don Stewart (Fiji;

PSG's liaison with BirdLife Pacific), and Carlos Valle (Ecuador).

If you are interested in becoming a Corresponding Member, please email Melanie Steinkamp, Chair of the

Corresponding Membership Committee (Melanie\_Steinkamp@fws.gov); or you can contact any current officer or member of the PSG Executive Council.

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## PSG'S TRAVEL AWARDS TO ANNUAL MEETINGS: FOR SCIENTISTS FROM OUTSIDE NORTH AMERICA, AS WELL AS STUDENTS

**Patricia Baird**

The Pacific Seabird Group offers modest travel awards to help people attend PSG's Annual Meetings. The awards are available to three categories of applicants: (1) students from the US or Canada; (2) students from outside the US and Canada; and (3) scientists (i.e., other than students) from countries outside the US and Canada.

Travel awards for students have been available for some years. Awards for non-student scientists, however, were created only recently (in 2006). I have discovered that many scientists outside the US and Canada have been unaware of this opportunity. PSG invites all "non-North American" seabird scientists to apply for a travel award, if it would help them attend an Annual Meeting. This article explains how to apply for PSG's travel awards, including scientists outside the US and Canada.

### HOW MANY SCIENTISTS OUTSIDE NORTH AMERICA KNEW ABOUT TRAVEL AWARDS?

I was asked a number of times recently about travel awards for PSG meetings. In the small sample of people who asked, I was surprised that many did not know about the non-student travel awards for researchers in countries other than the United States and Canada. I therefore sent a query to PSG

members from countries outside the US and Canada, asking whether they knew about this award. (One exception was for a Canadian living abroad.)

The majority of respondents were not aware of the award. Of all respondents, 67% did not know that such an award existed, and 33% did know about the award. Of the 16 people who responded that they did not know, 31% were from New Zealand, 19% from Latin America, 25% from Europe, 19% from Japan, and one person (6%) was a Canadian living overseas. Of the 8 who responded that they did know, 63% were from Europe, 25% were from Japan, and 13% were from New Zealand. No one in Latin America stated that they were aware of this award. However, the positive note in all of this was that many people thanked me for making them aware of the award.

Figure 1 shows the results. Although the sample size was small (24 people responded, or 29% of those whom I queried), I think it was a valid representation of PSG members. A likely reason that such a low number responded was that many researchers were still in the field when I queried them.

Because of this lack of knowledge about the award, I have summarized below current policy of PSG's Executive Council regarding travel awards,

particularly for non-North American researchers—students and non-students. This will help members outside of Canada and the US who have wanted to attend PSG, but who have been unable to do so because they lacked their own travel funds. Many researchers thought that the awards were just for students. They are not.

### STUDENT AND SCIENTIST TRAVEL AWARDS

Travel awards are generally given out each year to help students from any country, and scientists from countries other than the US and Canada, to attend the Annual Meeting. To be considered for the student travel award, a student must qualify as a student at the time of registration for the meeting. All of those who would like a travel award must submit an application by email (or hard copy) to the Past Chair of PSG. There will be a deadline for travel award applications for each Annual Meeting.

An invitation to apply for a travel award is included on the web page for each Annual Meeting and is posted on PSG's Listserv. You can also find contact information for the current Past Chair on our website ([www.pacificseabirds.org](http://www.pacificseabirds.org)). Anyone may ask for information about travel awards by writing to the Past Chair.

There are now three categories of travel awards: (1) Students from the US

## HOW PSG RUNS • Travel awards to PSG meetings

or Canada; (2) students from outside the US and Canada; and (3) *scientists (not students) from countries outside of Canada and the US*. Therefore, if you are not a student, but you live outside Canada or the United States, you can apply for travel funds to help you attend an annual meeting of PSG in the category of “Non-US/Canada scientist.”

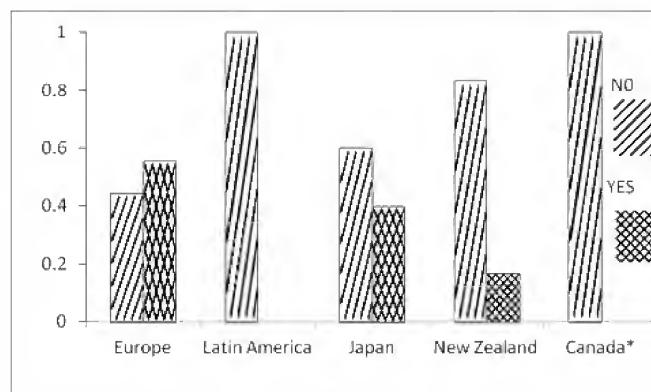
Applications for all travel awards are reviewed by the Awards Committee.

The committee’s members include the Past Chair, the current Chair, and the Chair-Elect. Successful applicants are contacted by the Past Chair before the meeting.

The total amount recommended for each year’s awards is up to \$4,000 for students (US/Canada and other countries combined), and up to \$2000 for non-U.S./non-Canada scientists. (All amounts are in US dollars.) The actual size of

awards may vary among years, depending on the number of applicants chosen and on available funds. Awards for travel to the 2012 Annual Meeting ranged from \$255 to \$375 for each student awardee; scientist awardees received \$500 each.

Additionally, donors to PSG can contribute to any of these three categories for travel awards. You may do this when you register for the meeting via the new “Regonline” system that has just begun.



\* One person living overseas

FIGURE 1. Proportion of PSG members who live outside of the US and Canada who stated they were or were not aware of PSG’s travel award for non-North American scientists. N = 24 (number of people who responded to the poll).

# CONSERVATION REPORT

Compiled by Jo Smith

## ISLAND RESTORATION AND ERADICATIONS

### PALMYRA ATOLL AND THE GREAT SHIP OF ERADICATION

In October 2012, Elizabeth Flint, biologist with the U.S. Fish and Wildlife Service (USFWS), reported no sign of living rodents on Palmyra Atoll since June 2011. Palmyra Atoll is a moist Central Pacific atoll that sits at 5°N, about 1600 km from Hawaii. It is both a USFWS refuge and a private preserve owned by The Nature Conservancy. The island's only human occupants are USFWS refuge staff, The Nature Conservancy staff, and visiting scientists. Ten species of seabirds breed on the atoll, totaling more than 325,000 individuals, and it is also home to the world's largest terrestrial invertebrate, the coconut crab (*Birgus latro*). This recent update from the USFWS and Island Conservation suggests that the project to eradicate rats on the atoll, which cost US\$2.7 million, may have been successful. The Palmyra Atoll eradication was supported by Island Conservation, the USFWS, The Nature Conservancy, and private donors. Led by Island Conservation's Alex Wegmann, an interagency team dropped rodenticide on Palmyra Atoll in June 2011 by helicopter to remove hundreds of thousands of black rats (*Rattus rattus*) while minimizing harm to wintering Bristle-thighed Curlews (*Numenius tahitiensis*). Ground crews also handcast bait to ensure complete coverage, while a team of biologists carefully monitored the ecosystems' flora and fauna for effects. The helicopter and ground crews were supported by a multinational, ship-based crew specializing in island eradication, which would later go on to support eradication on two other remote islands in the Pacific Ocean.

According to the USFWS, a site must be free of rats for two years before

eradication is considered successful. However, since rats can reproduce year-round on the tropical island, managers will likely be able to declare success in late 2012. For more info, please visit the Protect Palmyra Blog <http://www.protectpalmyra.org/blog/>

The precedent-setting eradication on Palmyra Atoll was part of a unique international partnership among the USFWS, Britain's Royal Society for the Protection of Birds, and other conservation organizations to complete three island restorations in turn: Palmyra Atoll (USA), Phoenix Islands Protected Area (PIPA, Kiribati) and Henderson Island (UK). Carrying two helicopters and extensive equipment, the M/V *Aquila* undertook a remarkable 27,000 km voyage throughout the Pacific Ocean, delivering bait and supplies to ground-based eradication teams on these remote islands.

This international partnership was more than 10 years in the making and succeeded in supporting three very important island restoration efforts, including the largest tropical or sub-tropical island ever cleared of introduced rats, Henderson Island (37 km<sup>2</sup>). Unfortunately, in late March 2012, rats were sighted on Henderson Island; we are awaiting news from the Phoenix Islands.

### WAKE ATOLL RAT ERADICATION EFFORT

In May-June 2012, a rat eradication was carried out on Wake Atoll, the northernmost of the Marshall Islands in Micronesia. Wake Atoll is one of the most isolated islands in the world and has been occupied by the US military since before World War II. The atoll is managed by the US Department of Defense and is within the Pacific Remote Islands Marine National Monument. The United States Air Force and United States Army currently

occupy the atoll. Wake Atoll is a breeding colony for many tropical seabirds, and the coral reefs support more than 300 fish and 100 coral species. The rat eradication project to restore seabird populations was a joint effort between the United States Air Force, U.S. Fish and Wildlife Service, and Island Conservation. An aerial drop of the anticoagulant rodenticide brodifacoum was accomplished with a helicopter brought from Alaska, a pilot from New Zealand, and a team of about 20 biologists and field staff. As with the rat eradication on Palmyra Atoll, the atoll must be rat-free for two years before the eradication will be considered successful. In spite of four post-eradication rat sightings, the team hopes follow-up protocols will kill all the rats.

### RAT ERADICATION ON MOKUAUIA STATE SEABIRD SANCTUARY

Mokuauia, or Goat Island, is a 5-ha islet on the northeastern coast of O'ahu, Hawai'i, lying just 260 m from shore. A Hawaiian State Seabird Sanctuary, Mokuauia is home to an estimated 6500 nesting Wedge-tailed Shearwaters (*Puffinus pacificus*) and several migrant shorebird species, including the Bristle-thighed Curlew. Beginning in 1967, black rats were documented on the island and were periodically observed over the next four decades. Then, from 2004 to 2006, data collected on shearwater nesting success noted a significant decline and in 2006, the Hawaii Division of Forestry and Wildlife (DOFAW) eradicated all rats. In 2011, rats were once again documented on the island; later that same year they were successfully eradicated by a joint project of DOFAW and Pacific Rim Conservation, using snap traps and the anticoagulant rodenticide diphenacoum in bait stations.

## CONSERVATION REPORT

Continued monitoring for shearwater nesting success and the presence of rats will determine the short-term effects of rats on the nesting and migrant birds; monitoring for new rat invasions will continue, due to the close proximity of the island to Oahu.

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### KA‘ENA POINT NATURAL AREA RESERVE IS NOW MORE NATURAL

Ka‘ena Point Natural Area Reserve on O‘ahu, Hawaii contains one of the largest seabird colonies in the main Hawaiian Islands. Seabirds have nested at Ka‘ena point for thousands of years and include Laysan Albatross (*Phoebastria immutabilis*), Wedge-tailed Shearwaters (*Puffinus pacificus*) and White-tailed Tropicbirds (*Phaethon lepturus*). Other native Hawaiian fauna and flora include Black-footed Albatross (*Phoebastria nigripes*), three species of boobies, three species of terns, and eleven federally endangered plants.

In 2011, a predator-proof fence was constructed across the peninsula at Ka‘ena Point to stop chronic predation by invasive alien mammals on the native species. After the fence was completed, Pacific Rim Conservation and the Hawaii Division of Forestry and Wildlife (DOFAW) led a multi-species predator removal project to restore Ka‘ena Point. To remove black rats, house mice (*Mus musculus*), and small Indian Mongooses (*Herpestes edwardsii*), diphacinone was used in bait boxes spaced 25 m apart. House mice were also removed using multiple-catch live traps spaced 12.5 m apart. Feral domestic cats (*Felis silvestris*) were removed from Ka‘ena Point using cage traps and padded leg-hold traps.

The results of the eradication efforts were initially successful. In one month, all cats and mongooses were eradicated; black rats were eradicated in 2.5 months, and house mice in 9 months. Since the initial removal of rats, cats, mice and mongoose, incursions of cats and mon-

goose have been rare—about two per year. However, incursions of black rats and house mice are more frequent—one per 56 days and 36-47 days, respectively. A recent failure of the rivets in the fence resulted in a larger mouse incursion, but it has now been fixed except for two small areas, and Ka‘ena Point Natural Area Reserve is expected to mouse-free again soon. In 2011-2012, a record number of Wedge-tailed Shearwater and Laysan Albatross chicks fledged from the reserve, which was likely attributable to decreased predation by invasive alien mammals.

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### MURRELETS

#### COMPLAINT FILED IN OREGON TO PROTECT MARBLED MURRELET HABITAT

On 31 May 2012, a complaint was filed by Crag Law Center in the United States District Court in Portland, Oregon against the Governor of Oregon and Oregon State land and forestry officials for violating section 11(g) of the Endangered Species Act. The Crag Law Center is representing Cascadia Wildlands, the Center for Biological Diversity, and Audubon Society of Portland. The complaint alleges that the defendants are engaging in the unpermitted “take” of Marbled Murrelets (*Brachyramphus marmoratus*) under the Endangered Species Act because they continue to authorize timber sales in areas occupied by Marbled Murrelets on the Tillamook, Clatsop, and Elliott State Forests. The groups contend that occupied sites are not being accurately or adequately designated, and that the timber sales are not only eliminating habitat but fragmenting the forest, which is leading to high predation rates on murrelets. Since the complaint was filed, the Oregon Department of Forestry has suspended operation on 10 timber sales.

The legal complaint can be viewed at this link: <http://crag.org/wp-content/uploads/2012/05/1-Complaint.pdf>

### U.S. GOVERNMENT AGREES TO WITHDRAW CRITICAL HABITAT FOR MARBLED MURRELET

The Obama administration agreed in October 2012 to give up nearly 1.5 million hectares (3.7 million acres) of critical habitat for the threatened Marbled Murrelet. This was part of their proposed settlement of a January 2012 lawsuit against the US government by the American Forest Resource Council, a timber industry group. Critical habitat for the Marbled Murrelet was designated in 2011 and covers parts of California, Oregon and Washington. The Council sued the US Department of Interior, arguing that this critical habitat violated the US Endangered Species Act because it included areas that were not occupied by the seabird when it was listed as endangered in 1992. The U.S. District Court for the District of Columbia must still approve the settlement agreement.

A spokesperson for the American Forest Resource Council said, “If all that habitat were being occupied by Marbled Murrelet, the murrelet would be so numerous it would not possibly be threatened.” The US government stated that vacating critical habitat for the next six years will “not significantly impair the conservation of the species,” according to the court document.

The government agreed to designate new critical habitat by 2018. The six-year delay is related to the agency’s workload. It is obliged to fulfil previous settlement agreements with conservation groups, which have sued to get decisions on a backlog of threatened or endangered proposals for a variety of species.

The American conservation community strongly disagrees with the government’s proposed action. “Murrelets urgently need more, not less, habitat protection,” said Noah Greenwald, endangered species director at the Center for Biological Diversity. “A backroom deal with the timber industry that strips protections for an endangered species is . . . shocking.” Greenwald pointed out that Marbled Murrelets have declined by

## CONSERVATION REPORT

about 4 percent per year since 2002. The bird relies on old-growth forests to lay its eggs, and logging has been the driving force of its habitat loss and decline, he said. Elimination of critical habitat could open the door to increased logging on public lands, which would further hinder murrelet conservation efforts.

“Even if the agency wants to vacate the 2011 critical habitat designation,” Greenwald said, “it should revert to a prior designation set in 1996, which included even more acreage. In most critical habitat challenges, the current habitat would remain in effect until the designation is revised.” In any case, recovery of a threatened or endangered species would be severely impaired unless suitable unoccupied habitat was available for the species’ expansion.

Center for Biological Diversity and 20 other conservation groups, including the Sierra Club, Audubon Society of Portland, and Oregon Wild, have sent a letter to the U.S. administration after the proposal became public, urging it to withdraw the agreement before it is finalized.

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### MARBLED MURRELET RETAINS THREATENED STATUS IN CANADA

The Marbled Murrelet was first listed as Threatened in Canada in 1990 and this listing was renewed in 2000. In 2012, the Committee on the Status of Endangered Species in Canada (COSEWIC) reviewed the status of the Marbled Murrelet in Canada. Based on a detailed status report, COSEWIC has maintained the Threatened status of the Marbled Murrelet. COSEWIC is responsible for determining the national status of wild Canadian species, subspecies, varieties or other designatable units that are suspected of being at risk of extinction or extirpation. Reviews are done every 10 years for listed taxa. COSEWIC’s decision, released in May 2012, was based on these reasons: “This small seabird is largely dependent on old growth coastal

forests in British Columbia for nesting. Habitat loss has been estimated at over 20% for the past three generations. Future threats including ongoing habitat loss, coupled with increased threats from proposed shipping routes in the core of the species’ range, increased fragmentation from a variety of proposed and recently initiated developments, fisheries bycatch and changing at sea conditions have resulted in projected population losses exceeding 30% over the next three generations.” The status report should soon be posted on the COSEWIC website, [www.cosewic.gc.ca/eng/sct5/index\\_e.cfm](http://www.cosewic.gc.ca/eng/sct5/index_e.cfm)

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### CANADIAN GOVERNMENT IS SUED FOR LACK OF PROGRESS ON MARBLED MURRELET RECOVERY STRATEGY

Ecojustice, a Vancouver-based charitable society dedicated to environmental litigation, filed a lawsuit on 25 September 2012 against the Canadian federal Minister of Environment. The lawsuit includes the Marbled Murrelet. Acting on behalf of five environmental groups, the suit seeks to enforce the Species at Risk Act (SARA) for four species likely to be affected by a pipeline and shipping facilities proposed by Enbridge Northern Gateway. The pipeline would bring bitumen from the tar sands in Alberta, and it would be shipped from the port at Kitimat, British Columbia (BC). In addition to the Marbled Murrelet, the suit includes Pacific Humpback Whale (*Megaptera novaeangliae*), Nechako White Sturgeon (*Acipenser transmontanus*), and Southern Mountain Caribou (*Rangifer tarandus caribou*). The recovery strategy for each of these species, as mandated by SARA, is at least three years overdue. According to Ecojustice, there are currently 188 recovery strategies for threatened or endangered species in Canada that are

past their legal due date for finalization. Overall, 87 recovery strategies are more than five years late, and another 49 recovery strategies are more than three and a half years late.

The Marbled Murrelet was included as a scheduled species at risk when SARA came into force in 2003, and a SARA-compliant recovery strategy was due to be posted on the Public Registry no later than September 2007. The Canadian Marbled Murrelet Recovery Team submitted a draft of the Marbled Murrelet Recovery Strategy in 2005 for approval by the Canadian and BC governments. In 2007, the Recovery Team was shown what appeared to be the final version, but this has not been posted. A draft Nesting Habitat Action Plan, covering the status and management of forest nesting habitat in British Columbia, was submitted by the Recovery Team to these governments in 2006. This was the first of three Action Plans recommended by the draft Recovery Strategy and none have been posted by the Canadian Government.

For five years there has been no discernable progress on the Marbled Murrelet Recovery Strategy. The Canadian Marbled Murrelet Recovery Team has not met for over two years, since March 2010. No reasons for the delay in posting the Recovery Strategy and moving ahead on its implementation have been given to members of the Recovery Team or released to the Canadian public.

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### XANTUS’S MURRELET SPLIT INTO TWO SPECIES

In July 2012, the American Ornithological Union (AOU) Checklist Committee voted to split the Xantus’s Murrelet (*Synthliboramphus hypoleucus*) into two species, based on evidence of very limited gene flow between the two populations, which overlap geographically. The AOU now lists the population that breeds in California as Scripps’s Murrelet (*Synthliboramphus scrippsi*) and the population of Baja California as Guadalupe Murrelet

## CONSERVATION REPORT

(*Synthliboramphus hypoleucus*) (Auk 129[3]:573, 2012). The Guadalupe Murrelet is known to winter in US waters and currently is not a confirmed breeder in the United States; both the AOU proposal and the US National Park Service note “unconfirmed accounts” of breeding on Santa Barbara Island in California. The Guadalupe Murrelet is distinguished from the Scripps’s Murrelet by more white on its face and it is usually seen farther from shore.

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### JAPAN SEABIRD GROUP AND PSG WRITE LETTER OVER CONCERNS FOR CONSERVATION OF SEABIRDS NEAR PROPOSED NUCLEAR POWER PLANT

On 26 September 2012, the Japan Seabird Group (JSG) and PSG wrote a joint letter to the Japan Prime Minister, Minister of Economy, Trade, and Industry, and Minister of Ministry of Environment concerning the proposed nuclear power plant at Kaminoseki in the Seto Inland Sea. The letter recommends the re-evaluation of the environmental assessment of the construction and operation of the plant, and it recommends long-term funding for seabird research and conservation in this area. Members of JSG and PSG gave presentations at an International Symposium organized by Nagashima Conservation Society in Hiroshima in early April 2011, and they visited the area of the proposed plant.

Both the JSG and PSG have expressed concern regarding the significant potential impacts that would be caused by construction and operation of a nuclear power plant in the Seto-nai Sea, including elevated water temperatures from waste waters, pollution, and human disturbance. Three species of seabirds and their prey would be affected: Japanese Murrelet (*Synthliboramphus wumizusume*), Ancient Murrelet (*Synthliboramphus antiquus*), and Streaked Shearwaters (*Calonectris leucomelas*).

The Japanese Murrelet and Ancient Murrelet occur in the marine waters adjacent to the proposed plant, the former during the flightless molt and breeding season, and the latter during the winter. The Japanese Murrelet is listed in Japan as Vulnerable by the ICUN and the Japan Ministry of Environment, because the global population is estimated at only 5,000-10,000 birds. Ancient Murrelets are listed as Critically Endangered in Japan. Streaked Shearwaters breed on an island nearby and are listed as Near Threatened by the local government of Yamaguchi Prefecture.

In their letter, the JSG and PSG also recommended additional surveys to determine all seabird colonies and foraging habitats in the Seto-nai Sea, and to use the proposed site only for purposes that did not harm seabirds, other marine species, or marine habitats. In addition to the Kaminoseki nuclear power plant, there are additional problems facing seabirds because the area is highly populated and industrialized; good long-term scientific data continue to be needed to protect the seabirds and the environment.

is attributed to the Professor Hasegawa’s efforts to secure stable nest sites on the island, the largest breeding colony for the Short-tailed Albatross in the world.

The Short-tailed Albatross is listed as Endangered under the US Endangered Species Act, and a joint Japan/USA Recovery Plan for the Short-tailed Albatross was published in 2008. The species was also assessed as Threatened in 2003 by Committee for Status of Endangered Wildlife in Canada (COSEWIC) and is listed under Canada’s Species at Risk Act.

Recovery efforts by Japan and the United States have included moving chicks from Torishima to Mukojima Island in the Ogasawara Islands, so as to create another breeding colony and reduce the risk of losing a large proportion of breeding adults or chicks in the event of an eruption on Torishima Island, which is an active volcano. If the current population growth rate continues, the population is expected to reach 5000 birds by 2018, a benchmark population size for avoiding extinction. The current number is believed to be large enough for the population to recover naturally.

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### ALBATROSS, PETRELS AND SHEARWATERS

#### SHORT-TAILED ALBATROSS NUMBERS RISE TO 3,000 BIRDS ON TORISHIMA ISLAND IN JAPAN

In August 2012, the population of the endangered Short-tailed Albatross (*Phoebastria albatrus*) reached about 3000 birds on Torishima Island in Japan. This remarkable recovery is owed to Toho University Professor Hiroshi Hasegawa, who has studied these birds since 1976 and led their recovery.

Thirty years ago, fewer than 200 of these birds existed and the species was thought to be extinct. In 2012, a record number of chicks fledged from the colony—353, the highest number since 1976. The breeding success on Torishima

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### RARE CALIFORNIA SEABIRD REPORTED BREEDING OFF MENDOCINO COAST

Scientists surveying rocky islands off the Mendocino County coast within the California Coastal National Monument made a remarkable discovery—four breeding sites for the Ashy Storm-Petrel (*Oceanodroma homochroa*), a rare and declining seabird that has not been reported nesting in this area since 1926.

California supports globally significant portions of this species, and USFWS estimates that there may be as few as 5500 Ashy Storm-Petrels in the world. Nearly all of the birds breed on the Channel Islands off Southern California and the Farallon Islands off San Francisco, with a handful of much smaller colonies known between Bird Rock (Marin County) and the Todos Santos Islands off Ensenada, Baja California.

## CONSERVATION REPORT

The survey team, led by Harry Carter, found breeding birds on an historic colony site that was thought to be abandoned, and on three new sites. These four sites may provide nesting habitat for at least 100 breeding individuals. Additional birds may breed nearby in inaccessible locations, which is significant given the small global population.

The Ashy Storm-Petrel is being considered for listing under the U.S. Endangered Species Act, because the species is declining, and there are numerous threats, including predation from owls, falcons, gulls, and skunks, as well as oil spills and light pollution. A decision on the Ashy Storm-Petrel listing is expected in 2013.

The Mendocino County discoveries expand the current breeding range of the species north by about 13 to 15 percent, a finding that has important implications for the conservation of the species. Research for these surveys was funded by the National Fish and Wildlife Foundation's Pacific Seabird Program, a Pacific-wide conservation initiative established in 2011 that includes the Ashy Storm-Petrel as one of 10 priority species.

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### CARIBBEAN SEABIRD MAY WARRANT U.S. PROTECTION

In June 2012, USFWS concluded that a rare Caribbean seabird, the Black-capped Petrel (*Pterodroma hasitata*), might warrant protection under the U.S. Endangered Species Act. USFWS has agreed with a petition from WildEarth Guardians, a U.S.-based environmental advocacy group, that threats to this species appear significant. The agency will conduct a year-long status review.

Globally, there are 13 breeding colonies for the Black-capped Petrel, and almost all of them are on Hispaniola, an island shared by Haiti and the Dominican Republic. According to USFWS, there are 2000 breeding pairs; the bird's foraging range includes the United States east coast from Florida through North Carolina.

Numerous threats have contributed to the species' decline, including deforestation, agricultural expansion, offshore oil development, subsistence hunting, predation by introduced species, pollution, mercury bioaccumulation, and inadequate regulatory mechanisms. Subsistence hunting in Haiti and the Dominican Republic has occurred for a long time, with birds being captured when a fire is lit at night. The petrels are also drawn to lights on oil rigs, a recent threat in offshore forage areas.

While 11 of the 13 known breeding populations are found in national parks, a USFWS conservation plan has done little to stop the species' decline, in part due to illegal logging and charcoal production. Current efforts to protect the Black-capped Petrel are considered insufficient.

to protect burrows from trampling damage and collapse. Within the cattle-proof fence, a pilot project to restore native plants in the colony has begun. On nearby Santa Clara Island, a second restoration project was started. Oikonos and biologists from the islands undertook a pilot project to restore and secure habitat within focal shearwater nesting areas by transplanting native seedlings; when the plants mature, they will stabilize the steep slopes within the colony and reduce soil erosion during heavy rains. Lastly, a variety of seed-rearing techniques are being tried on Robinson Crusoe Island with the goal of growing seedlings and ensuring successful future transplantation to Pink-footed Shearwater colonies in the archipelago.

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### PINK-FOOTED SHEARWATER COLONY PROTECTED IN CHILE

Oikonos Ecosystem Knowledge, a non-profit organization based in California, has undertaken three breeding habitat restoration projects for pink-footed shearwaters (*Puffinus creatopus*) in the Juan Fernández Islands, Chile. The work is being done in collaboration with American Bird Conservancy and the Corporación Nacional Forestal (CONAF, Chile). Pink-footed Shearwaters are endemic to Chile, spend the austral winter as far north as British Columbia, Canada, and forage within the California Current Ecosystem. Pink-footed Shearwaters are listed as Vulnerable by the IUCN and as Threatened in Canada by the Species at Risk Act, due to a very small breeding range and threats of fisheries bycatch, respectively. The global population size is estimated at 20,000 pairs.

Cattle are one of the dominant threats to Pink-footed Shearwater nests on Robinson Crusoe Island. In 2012, a cattle-proof fence was constructed around the majority of the second-largest shearwater breeding colony on the island,

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### BERMUDA PETREL NUMBERS TOP 100 NESTING PAIRS

The number of nesting pairs of Bermuda Petrels (*Pterodroma cahow*; also called Cahows) has now reached over 100 in Bermuda. A critically endangered species, this burrow-nesting bird was devastated through hunting by the island's early settlers in the early to mid-1990s, plus the introduction of non-native species such as dogs, rats, and pigs. The Cahow was considered extinct until 1951, when it was rediscovered on several islets by Louis Mowbray and Robert Cushman Murphy. At that time, the entire population was estimated at 18 pairs.

In 1951, a recovery program was soon launched to try to bring the Cahow back from the brink of extinction. In 2009, as many as four Bermuda Petrels began investigating Nonsuch Island for possible nesting, a small islet at the entrance of Castle Harbor in Bermuda. By 2011 the species' total population had increased to 98 nesting pairs, with a record number of 56 fledged chicks.

## CONSERVATION REPORT

A recovery program was soon launched to try to bring the Cahow back from the brink of extinction. David Wingate was a teenager in the group that found the nests in 1951, and he subsequently devoted his life to the conservation and protection of Bermuda's bird life, especially the Cahow. Among his accomplishments for recovery of this species are legal protection of the nesting islands as sanctuaries, and removing invasive species and predators from some of those islands. David's dedication shows that one person can make a huge difference, if the will and energy necessary to get a job done are applied.

Today there are 101 known pairs of this critically endangered species. Jeremy Madeiros, Senior Terrestrial Conservation Officer in Bermuda, said "The Recovery Program has reached a critical milestone, but the ultimate objective is to increase the number of nesting Cahows to at least 1,000 nesting pairs. That is the only point at which it can be down-listed from 'critically endangered' to 'threatened.' "

More information on the Bermuda petrel status is at [www.conservation.bm/news-hot-topics/2012/3/23/cahow-population-reaches-101-pairs-for-the-first-time-since.html](http://www.conservation.bm/news-hot-topics/2012/3/23/cahow-population-reaches-101-pairs-for-the-first-time-since.html). Details of

Wingate's contribution were contributed by George Hunt.

### ALCIDS

### RABBITS AND DEER ON SEABIRD COLONIES IN WASHINGTON STATE

Three seabird scientists from the Washington Department of Fish and Wildlife, National Oceanic and Atmospheric Administration, and the University of Puget Sound are collaborating with USFWS's Washington Maritime National Wildlife Refuge Complex to monitor population trends of Rhinoceros Auklets (*Cerorhinca monocerata*) on Destruction, Protection, and Smith Islands.

Protection Island is located in the Juan de Fuca Strait and includes one of the largest nesting colonies for Rhinoceros Auklets in the world. The island is sparsely inhabited by people and is closed to the public. Destruction Island is 5.6 km from the west coast of Washington and is currently unoccupied by people; it was home to lighthouse

keepers from 1888 to 1968. Smith Island, the smallest of the three islands, is also in the Juan de Fuca Strait; it is currently unoccupied, although lighthouse keepers lived there from 1858 to the 1950s. European rabbits (*Oryctolagus cuniculus*) were introduced to Destruction Island many decades ago, and black-tailed deer (*Odocoileus hemionus columbianus*) live year-round on Protection Island, swimming there from the nearby mainland. There are no introduced species on Smith Island.

Scott Pearson, Tom Good, and Peter Hodum are working in collaboration with the USFWS to develop and implement surveys to estimate the colony size of burrow-nesting seabirds. They will also investigate population trends and breeding habitat associations for the seabirds on all three islands. Additional research will assess the effects of introduced deer and rabbits on the Rhinoceros Auklets and the islands' native plant communities.

For a recent news article on the rabbits on Destruction Island, see this link to The Seattle Times: [http://seattletimes.com/html/localnews/2018850249\\_destruction05m.html](http://seattletimes.com/html/localnews/2018850249_destruction05m.html)

# MEETING NEWS

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## **PSG CELEBRATES ITS 40TH ANNUAL MEETING IN PORTLAND, OREGON, 20-24 FEBRUARY 2013,**

PSG has reached the milestone of our 40th year. The Annual Meeting in Portland will celebrate this achievement, as well as the science and conservation work for which PSG is known.

Portland is famous for its green space and wide diversity of cuisines, art, music, local innovation, and sheer weirdness; thus the city will be an ideal location to celebrate PSG's 40th. In addition, PSG is offering receptions with tasty food and the opportunity to reunite with your seabird colleagues; three days of papers, plus posters; and a session for students to meet with mentors. On the final evening there will be a banquet, featuring a Lifetime Achievement Award (always good for slides of field activities), and finishing up with a dance.

Although the city lies around 65 miles from the sea (as the murrelet flies), both the Willamette and Columbia rivers that surround it are home to huge populations of seabirds and waterbirds, including the largest colonies of Double-crested Cormorants, Brandt's Cormorants, and Caspian Terns on Earth. Portland lies within a short drive of the coast and the Columbia River Gorge National Scenic Area with some of the most breath-taking natural beauty in the Pacific Northwest. Mt. Hood is 90 minutes away, if you're inclined to add a skiing or snowboarding vacation to your trip. Several field trips will be offered on 24 February, after the conclusion of the regular conference program.

The Scientific Chair is Doug Forsell, and the hardworking Local Program Chair is Holly Freifeld ([hfreifeld@abcbirds.org](mailto:hfreifeld@abcbirds.org)).

For more information, the preliminary schedule, and registration, go to

[www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org), then click on "Annual Meetings" in the top bar of the page.

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## **PSG'S 41ST ANNUAL MEETING WILL BE IN JUNEAU, ALASKA**

PSG will hold its 2014 Annual Meeting on 18-22 February 2014, at Centennial Hall in Juneau, Alaska. The Local Committee is co-chaired by Mayumi Arimitsu ([marimitsu@usgs.gov](mailto:marimitsu@usgs.gov)) and Sadie Wright ([sadie.wright@noaa.gov](mailto:sadie.wright@noaa.gov)). Juneau is an historic town at the edge of the Gulf of Alaska, with many wintering seabirds and waterfowl in nearby sheltered inlets.

More information will be available in future months on PSG's website and in *Pacific Seabirds*.

# PSG NEWS

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## **PSG ADOPTS COMPUTERIZED RECORDS AND REGISTRATION**

PSG has implemented a new computerized membership system, which is linked to an online program for starting or renewing your membership. This should improve the accuracy and accessibility of our membership records, not to mention the amount of time the Treasurer must expend to maintain them and keep account of funds. Although membership transactions have been online for several years, records were still kept by hand.

To join PSG or renew your membership, visit PSG's website, [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org).

[pacificseabirdgroup.org](http://pacificseabirdgroup.org), or go directly to <https://www.regonline.com/psgmembership>. Credit cards and checks are accepted. For renewals, or to edit information for an existing membership, use the link above and log in using the email address that you used to join or to renew your membership. (If this email address is different from your Listserve one, be sure to use the former.)

Membership rates are the same—individual \$30, students \$24, and life membership \$900 (can be divided into 5 annual payments of \$180).

If you encounter any problems, contact treasurer for help—Lindsay Young, [lindsay@pacificrimconservation.com](mailto:lindsay@pacificrimconservation.com)

Lindsay has also set up a computerized system for meeting registration. Among other advantages (most of which will be of most benefit to the Treasurer and meeting organizers), the system will automatically let members register for a lower fee than nonmembers. Membership is not required to register for the conference, however, and you're welcome to register for the meeting as nonmember.

You may register for the upcoming meeting via the PSG website, or go directly to <http://www.regonline.com/pacificseabirdgroup2013>

# EXECUTIVE COUNCIL MINUTES

The Pacific Seabird Group's Executive Council (Exco) meets two or more times a year, at the winter Annual Meeting and during the rest of the year by conference call. Each meeting's Minutes are available after they are approved at the next Exco meeting: a summary in *Pacific Seabirds*, and the full Minutes on the group's website ([www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org))

## SUMMARY OF MINUTES OF THE EXECUTIVE COUNCIL MEETING

15 May 2012, by Conference Call

### PSG ADMINISTRATION

**Motions were passed unanimously** to approve minutes of the Executive Council (EXCO) meeting in Turtle Bay, Oahu, Hawaii on 7, 9, and 10 February 2012, and minutes of a closed Executive Council (EXCO) conference call meeting on 27 February 2012 (regarding personnel matters).

### FINANCIAL COMMITTEE UPDATE (LINDSAY YOUNG)

The Financial Committee is working with an accountant and has completed PSG's current tax return. A PSG account has been set up at a bank in Hawaii, and we now have a PSG credit card. The accountant has confirmed that all votes taken by EXCO at the EXCO meetings in February 2012, in relation to World Seabird Union funds, were within our rights.

The next step for the committee is an audit of PSG's books. There was a general consensus among EXCO that an audit for least the past fiscal year (1 October 2011–30 September 2012) should be completed, which will cost \$6,000–\$7,000. **A motion was passed unanimously** to hire an accountant to

conduct an audit of PSG's books for the most recent complete fiscal year. The Financial Committee will report results to EXCO and will recommend whether previous years' books seems necessary.

On 19 March 2012, EXCO engaged attorneys Kessner Umebayashi Bain & Matsunaga to address the deposit at Makaha. The attorneys wrote a letter to Makaha and Northwynd but did not receive any response. In a letter from the attorneys dated 1 May 2012, EXCO was advised that further legal action would not be productive, since collecting a reimbursement does not look promising. The financial committee concluded that, based on this recommendation, EXCO would not try to pursue a judgment.

**A motion was passed unanimously** to cease pursuing legal action against Northwynd; but this does not preclude EXCO from pursuing other means of recovering the Makaha deposit. [Editor's note: more on the Makaha problem is in *Pacific Seabirds* 39(1):40, 2012.]

### BYLAWS AMENDMENT PROPOSAL

There are two suggested bylaw changes that were tabled at the February 2012 meeting in Hawaii. General discus-

sion among EXCO concluded that both bylaw proposals require amendments before EXCO moves forward. A small subcommittee was formed to amend both bylaw proposals and to present them to EXCO for discussion.

### ANNUAL MEETING UPDATE

**Local Committee Chair's report (Holly Freifeld)**—The Local Committee is moving forward, preparing a meeting budget and finalizing room blocks and rates with the Hilton in Portland.

**Scientific Program report (Doug Forsell)**—It appears that Marbled Murrelets will be a central theme at the 2013 meeting. The call for papers will be sent out in August with abstracts due at the end of October.

**Board Retreat (Pat Jodice and Pat Baird)**—John Glaza has done a lot of this type of training and comes highly recommended. He takes a two-pronged approach; of informing the board of their governance role and their fiduciary responsibilities. There would be 4 to 6 hours of face-to-face training, and his fee for everything is \$2,000.

# REGIONAL REPORTS FOR 2011

Regional Reports summarize current seabird work of interest to PSG members. Regional Reports generally are organized by location of the work, not by affiliation of the biologist. They should not be cited without permission of the researchers. The report for Northern California also includes work for 2010.

## ALASKA

Compiled by Adrian Gall

### BEAUFORT AND CHUKCHI SEAS

**Adrian Gall** and **Bob Day** of ABR, Inc.—Environmental Research and Services (ABR) completed the fifth field season of boat-based seabird surveys in the northeastern Chukchi Sea. Their crew that included **Corey Grinnell**, **Tim Obritschkevitsch**, **Jonathan Plissner**, and **Peter Sanzenbacher**. These surveys are part of the Chukchi Sea Environmental Studies Program (CSESP), an interdisciplinary oceanographic study that collects data concurrently on physical and biological oceanography, benthic ecology, fisheries, contaminants, marine mammals, and seabirds from 60 to 100 NM (111 to 185 km) offshore from the village of Wainwright. The first round of papers from this study (currently in review) will be released in a special issue of the journal *Continental Shelf Research* in early 2013. This study is funded jointly by ConocoPhillips, Shell Exploration and Production (Shell E & P), and Statoil. More information is available at the project website, <http://www.chukchiscience.org>

**Adrian Gall** and **Tawna Morgan** (ABR) coordinated the first field season of seabird surveys in the coastal zone (within 5 km of shore) of the Chukchi Sea from Icy Cape to Point Franklin, including the Kuk Lagoon near Wainwright, AK. They conducted one 6-day survey per month in June, July, and August with help from **Corey Grinnell** and **Steve Murphy** (ABR). They surveyed for seabirds and sampled surface-water characteristics from the trusty M/V *Tukpuk*, a 32-ft landing craft operated by captains **Blair Patkotak** and **Tom Mahoney** (Olgoonik Development). This study is being funded by Shell E & P.

**Kathy Kuletz** and **Liz Labunski** of the U.S. Fish and Wildlife Service—(USFWS) completed the third of four years of pelagic seabird surveys in the northern Bering, Chukchi and Beaufort seas, as part of the “Seabird Distribution in the Offshore Environment” project, funded by the Bureau of Ocean Energy Management (BOEM). In 2012, they placed observers on six arctic research cruises for a total of 163 days at sea and over 16,000 km of transects.

**Don Dragoo**, **Arthur Kettle**, and **Dave Bolin** of USFWS’s Alaska Maritime National Wildlife Refuge (AMNWR) collected data on populations and productivity of Black-legged Kittiwakes (*Rissa tridactyla*), Common Murres (*Uria aalge*) and Thick-billed Murres (*Uria lomvia*) at Cape Lisburne, northwest Alaska.

### BERING SEA AND ALEUTIAN ISLANDS

In late July and early August, AMNWR undertook a voyage to St. Matthew and Hall Islands to conduct counts of ledge-nesting seabirds on both islands. The trip was led by **Heather Renner** and **Marc Romano**, aided by Refuge Manager **Steve Delehanty**, **Marianne Aplin** (AMNWR), **Tony DeGange** (U.S. Geological Survey; USGS), **Aaron Poe** (USFWS), **Rich Kleinleder** (URS Corp.), and **Ned Rozell** (University of Alaska, Fairbanks; UAF). In addition, an interdisciplinary team of researchers participated on the cruise.

Annual seabird monitoring at St. George and St. Paul islands was led by **Marc Romano** (AMNWR), with summer-long field crews consisting of **Greg Thomson** and **Houston Flores** (St. Paul) and **Matt Klostermann**, **Lauren Scopel**, and **Casey Engstrom** (St. George). Both crews collected data on a variety

of species, including Red-legged (*Rissa brevirostris*) and Black-legged Kittiwakes, Least Auklets (*Aethia pusilla*), and Common and Thick-billed Murres.

**Thomas Van Pelt** (North Pacific Research Board [NPRB]) continues work as a program manager of the Bering Sea Project, a collaborative ecosystem-scale research effort of the National Science Foundation, NPRB, and National Oceanic and Atmospheric Administration (NOAA). The aim of the project is to improve our understanding of the impacts of climate change and dynamic ice cover on the eastern Bering Sea ecosystem. Seabird research within a broad ecological context plays a substantial role in the Bering Sea Project, and interesting results are emerging, now that the program is deep in the synthesis and write-up phase. To learn more and to download publications, please visit the program website at <http://bsierp.nprb.org/>

**Rachael Orben** has completed fieldwork for her dissertation with **Scott Shaffer** at the University of California at Santa Cruz. Her research is part of a large project funded by NPRB that is spearheaded by **Dave Irons** (USFWS) and **Dan Roby** (Oregon State University). Rachael’s work focuses on the winter distribution and ecology of Black-legged and Red-legged Kittiwakes and Thick-billed Murres on St. Paul, St. George, and Bogoslof Islands.

**Ann Harding** (Auk Ecological Consulting) continued writing with the Bering Sea Project, focusing on a comparison of Thick-billed Murre foraging behavior between the Pribilof Islands and Bogoslof Island. She is just starting a new NPRB-funded program on the Pribilof Islands, working with local kids and seabirds.

## REGIONAL REPORTS • Alaska

**Kathy Kuletz** and **Liz Labunski** (USFWS) conducted surveys during transits through the Bering Sea and along the Aleutian Islands for 26 days at sea and 879 km of transects. A highlight was a sighting of a Short-tailed Albatross (*Phoebastria albatrus*) in the Chukchi Sea. The 2012 observers were **Andy Bankert**, **Kathy Kuletz**, **Liz Labunski**, **Catherine Pham**, **Martin Reedy**, **Heather Renner**, **Martin Renner**, **Melanie Smith**, **Declan Troy**, and **Tamara Zeller**. Kathy Kuletz is working with others on synthesis publications based on research conducted as part of the Bering Sea Project (field work was done in 2008 to 2010). In November 2012, two graduate students involved in this project, **Nathan Jones** and **Brian Hoover** (Moss Landing Marine Labs, California State University) will defend their respective theses on diet and foraging distribution of Thick-billed Murres and Black-legged Kittiwakes. Data from all at-sea surveys will be archived in the North Pacific Pelagic Seabird Database.

Results of these Arctic surveys on the Beaufort and Chukchi Seas and also the Bering Sea and Aleutian Islands will be integrated into two synthesis efforts —the BOEM-funded “Synthesis of Arctic Research,” led by **Sue Moore** (NOAA), and the NPRB-funded “Pacific Marine Arctic Research Synthesis,” led by **Jackie Grebmeier** (Chesapeake Biological Laboratory).

Alaska Department of Fish and Game staff monitored Black-legged Kittiwake, Common Murre, and Pelagic Cormorant (*Phalacrocorax pelagicus*) populations and productivity at Round Island in the Walrus Islands State Game Sanctuary, between May and August 2012. Black-legged Kittiwake productivity was 0.09 chicks/nest within the monitoring plots with 9% of the 54 nests monitored being successful. Common Murre productivity was 0.10 chicks/nest with 10% success of 30 nests monitored. Pelagic Cormorant productivity was 1.93 chicks/nest with 87% of the 15 nests monitored being successful.

**Michael Swaim** (Togiak National Wildlife Refuge, Dillingham, Alaska)

supervised the annual monitoring of numbers, breeding chronology and breeding success of Black-legged Kittiwakes, Common Murres, and Pelagic Cormorants at Cape Perce. He accompanied and trained **Marinda Cokeley** (USFWS volunteer, Redding, CA), and **Ed Murphy** (UAF, emeritus), conducting 9 census counts and initiating the documentation of breeding chronology and success in mid-June to early July. **Michael** and **Patrick Walsh** (Togiak National Wildlife Refuge) returned in early August to finalize data collection on chronology and productivity.

**Kathy Kuletz** and **Martin Renner** (USFWS) have initiated a risk assessment for seabirds in the Aleutian Islands, with an emphasis on risks from shipping traffic and accidents. This project will integrate the seabird colony and pelagic seabird databases to model seasonal patterns of seabird distribution in the Aleutian Archipelago, along with shipping traffic and physical and oceanographic layers. The objective is to improve planning and response to shipping accidents in this important seabird region. In the final phase of the project, **David Irons** and local consultants will assist in adding the risk assessment portal to Seabirds.net. The goal is to provide immediate information on seabird species at risk from a spill for a specific area and season, to assist response activities. Additionally, the web site could be used proactively to develop response plans under different spill scenarios and to identify critical data gaps for seabirds in the Aleutian Archipelago.

Annual seabird monitoring at Buldir and Aiktak islands was led by **Jeff Williams** (AMNWR). Jeff also led coastline surveys of Atka, Amlia and Seguam islands. **Robb Kaler** and **Leah Kenney** continued Kittlitz’s Murrelet (*Brachyramphus brevirostris*) monitoring at Adak Island.

**Ed Melvin**, **Sarah Jennings**, and **Troy Guy** (Washington Sea Grant, University of Washington) are analyzing fishery observer data for the Alaskan longline groundfish fisheries, to identify trends in albatross bycatch rates across

fleets. Based on this analysis, they will evaluate the need for renewed outreach to the longline fleet; if necessary, they will propose an outreach plan to Alaskan longliners to reinforce the need for seabird conservation in these fisheries and inform fishers about the basics of seabird bycatch mitigation. Funding is from NOAA’s Alaska Fisheries Science Center.

### GULF OF ALASKA

**Nora Rojek** (USFWS) coordinated long-term seabird demography monitoring for AMNWR at Chowiet Island, Semidis group, off the coast of the Alaska Peninsula. Summer-long field crew members **Erik Andersen** and **Joann Wang** worked with several species, including Northern Fulmar (*Fulmarus glacialis*), Black-legged Kittiwake, Glaucous-winged Gull (*Larus glaucescens*), Common and Thick-billed Murres, Parakeet and Rhinoceros auklets (*Aethia psittacula* and *Cerorhinca monocerata*), and Horned and Tufted Puffins (*Fratercula corniculata* and *F. cirrhata*).

**Rojek** also conducted seabird coastline surveys in July, based off the research vessel *Arlluk*, which belongs to the Alaska Peninsula National Wildlife Refuge (APNWR). They surveyed around several AMNWR-managed islands along the Alaska Peninsula near the villages of Chignik and Perryville: Atkulik, Spitz, Chiachi, Shapka, Petrel, Pinusuk and an unnamed island near Chiachi Bay. Additional crew members included **Dean Kildaw** (Homer, AK), **Kevin Payne** (APNWR), and vessel captain **Orville Lind** (APNWR).

**Ann Harding** (Auk Ecological Consulting) helped with an MIT (Massachusetts Institute of Technology) avian flu study on Egg Island, Prince William Sound, this summer.

**Bob Day** and **Adrian Gall** (ABR) continued bimonthly aerial surveys for Steller’s Eiders (*Polysticta stelleri*) in Iliamna and Iniskin bays, western Cook Inlet. They also conducted a boat-based survey of breeding birds with the help of **Tawna Morgan** and **Peter Sanzenbacher**. Over the past 7 years, this

## REGIONAL REPORTS • Alaska

project has documented the use of these bays by summering and wintering birds to provide baseline information for permitting applications related to the Pebble Project, a mining development proposed in southwest Alaska. This project will continue through 2013.

**Laura Phillips, Leslie Adams, Nicole Dewberry, and Elisa Weiss** of Kenai Fjords National Park (KEFJ), together with **Jennifer Curl** and **Christine Hunter** from UAF and **Leslie Slater** (AMNWR) continued field work in summer of 2012 as part of a cooperative 3-year study funded by the National Park Service to assess occupancy, distribution and abundance of colonial nesting seabird populations in the Kenai Fjords region. They focused on a method comparison for quantifying populations of ledge-nesting seabirds, with the overarching goal of developing a long-term monitoring plan for these species, which include Black-legged Kittiwakes, Pelagic Cormorants, Red-faced Cormorants (*Phalacrocorax urile*), Double-crested Cormorants (*Phalacrocorax auritus*), Common Murres, and Glaucous-winged Gulls (*Larus glaucescens*). They identified Glaucous-winged Gulls as a focal species for testing survey methods. They conducted 7–20 replicate surveys of plots at gull colonies for each of 3 potential survey methods (double-observer counts from a boat, photographic surveys from a boat, and photographic surveys from the air) with the objective of identifying the most cost-effective and robust method to count both individuals and nests. They also deployed a time-lapse camera at a single colony to look for patterns in colony attendance by adult Glaucous-winged Gulls. In addition, they counted and photographed historical plots at Black-legged Kittiwake colonies established during the 1989 *Exxon Valdez* oil spill. Finally, they continued to assess the distribution of colonial seabird species in the Kenai Fjords region by conducting a trial deployment of a passive acoustic recording device (Song Meter, Wildlife Acoustics Inc.) for species that are difficult to detect through visual surveys, including nocturnal burrow-nesting

species such as Rhinoceros Auklets and Fork-tailed Storm-Petrels (*Oceanodroma furcata*). Field work will continue in 2013.

**John Maniscalco** (Alaska SeaLife Center) monitored Common Murre productivity at Barwell Island, Resurrection Bay, using two time-lapse cameras.

**Scott Hatch** (USGS) continued research and monitoring on Middleton Island, including continuation of the protocol for supplemental feeding of Black-legged Kittiwakes in the radar tower colony. Construction continues on a Common Murre research habitat to complement the tower colony of kittiwakes and Pelagic Cormorants. **Kyle Elliot** (PhD candidate, University of Manitoba) served as station leader in 2012 and continued comparative research on mechanisms of aging in kittiwakes and other avian species. Kyle was assisted all season by **Thomas Wood** (University of Manitoba) and collaborated with **Yan Ropert-Coudert** (Centre National des Recherches Scientifiques, Strasbourg, France) and **John Speakman** (University of Aberdeen, Aberdeen, Scotland). They attached time-depth recorders to 17 Rhinoceros Auklets and recaptured 14; birds returning with salmon (*Oncorhynchus* spp.) appeared to dive shallower than those returning with capelin (*Malotus villosus*).

**Elliot** and his crew also examined the cost of flight and diving in 22 Pelagic Cormorants, using doubly-labeled water and accelerometers, and looked at the hormonal and immune status and foraging behavior of almost 100 known-aged Black-legged Kittiwakes. For the fifth consecutive year, kittiwakes on Middleton ate mostly capelin and had excellent production, suggesting the system experienced a regime shift around 2008.

**Jorg Welcker** (Norwegian Polar Institute) visited the station in mid-summer to continue studies on kittiwake endocrinology and telomere biology. Led by Middleton alumnus and Ph.D. candidate **Thomas Merkling**, **Emilie Lefol**, **Laurent Gaillard**, and **Emmanuelle Voisin** (Université Paul Sabatier, Toulouse, France), continued their studies

of kittiwake behavioral ecology. The 2012 Middleton crew was rounded out by USGS volunteers **Mark Daran** (New York), **Allison Salas** (Florida), and **Greg Taylor** (Florida).

### PRINCE WILLIAM SOUND

In July 2012, USFWS biologists conducted surveys of marine bird and mammal abundance in Prince William Sound (PWS). This field effort was conducted by a team of nine surveyors, working from three survey vessels. **Dan Cushing** (Oregon State University) is currently evaluating long-term patterns of change in the marine bird community of PWS.

**Ann Harding** (helped with an avian flu study by the Massachusetts Institute of Technology on Egg Island, PWS in summer 2012.

**Mary Anne Bishop** (Prince William Sound Science Center) and **Kathy Kuletz** continued their study on seasonal and interannual trends in seabird predation on juvenile Pacific herring (*Clupea pallasi*) during winter months, including environmental and habitat factors associated with seabird distribution. This project is part of the Herring Restoration Plan funded by the *Exxon Valdez* Oil Spill Trustee Council.

### SOUTHEAST ALASKA

The Southeast Alaska Inventory and Monitoring Network (SEAN) of the National Park Service began development of a focused monitoring program for Kittlitz's Murrelets (*Brachyramphus brevirostris*) in Glacier Bay in 2009. In 2012, they completed the fourth season of population abundance and distribution monitoring. Results from 2009 and 2010 indicate a July population of approximately 14,000 individuals, and 2011 and 2012 estimates will be completed in the near future. Participants for 2012 included **Steven Hoekman** (Wild Ginger Consulting), **Matthew Kirchhoff** (Audubon Alaska, retired), **William Johnson** (SEAN Data Manager), and **Chris Sergeant** (SEAN Ecologist). These monitoring efforts also contributed directly to the long-term monitoring

lessons presented in a recently published article: Sergeant, C. J., Moynahan, B. J. and Johnson, W. F. 2012. Practical advice for implementing long-term ecosystem monitoring. *Journal of Applied Ecology* 49:969–973.

**Tim Marcella** (MS candidate, Oregon State University), in collaboration with **Daniel Roby** (USGS, Oregon Cooperative Fish and Wildlife Research Unit) and **Scott Gende** (National Park Service), completed the second and final season of field data collection for a study of the potential disturbance to Kittlitz's Murrelets from cruise ships operating in Glacier Bay National Park. The field crew conducted both land-based and ship-board observations during the study. Between early June and mid August 2012, data were collected from the bow of 24 cruise ships, using rangefinder binoculars to record the distances at which murrelets flushed in advance of the ships. Land-based observations were made both in the presence and the absence of cruise ships in an effort to discern the distance at which murrelets alter their behavior in reaction to cruise ship traffic. Analysis is ongoing with a goal of completion in 2013.

The 2012 seabird monitoring crew at St. Lazaria Island consisted of **Ashley Hovis, Amanda Millay, Naira de Gracia, and Leslie Slater** (AMNWR). They collected data for estimates of population trends for nine species of seabirds: Leach's (*Oceanodroma leucorhoa*) and Fork-tailed (*O. leucorhoa*) Storm-Petrels, Pelagic Cormorants, Glaucous-winged Gulls, Pigeon Guillemots (*Cephus columba*), Common and Thick-billed Murres, Rhinoceros Auklets, and Tufted Puffins. They also assessed annual productivity for eight species (all but Pigeon Guillemot). They collected data on chick growth and diet for the two storm-petrel species and Rhinoceros Auklets, and on diet for Glaucous-winged Gulls.

**Alexis Will** continued her graduate work at UAF, with funding from NPRB, as part of the Gulf of Alaska Integrated Ecosystem Research Program (GOAI-ERP). She is studying Rhinoceros Auk-

lets on St. Lazaria to learn about adult foraging locations during the breeding season. **Leslie Slater** participated in a GOAIERP cruise to record seabirds and marine mammals along established transects in the eastern Gulf of Alaska.

**Rian Dickson** (Simon Fraser University, Burnaby, British Columbia [BC]) was in Juneau in early summer to capture Barrow's Goldeneyes (*Bucephala islandica*) for satellite transmitter implantation, along with **Sean Boyd** (Environment Canada, Delta, British Columbia), **Tim Bowman** (Sea Duck Joint Venture, Anchorage), **Mike Petrula** and **Jason Schamber** (Alaska Dept of Fish and Game, Anchorage).

#### DATA PRODUCTS AND SERVICES

The EWHALE (Ecological Wildlife Habitat Analysis of the Land- and SeascapE) lab at UAF, under **Falk Huettmann**, keeps working on seabirds and marine data issues world-wide. An MSc thesis was just completed by **Moritz Schmid**, a student under the Masters of International Conservation (MINC) program from the universities of Göttingen (Germany) and Lincoln (New Zealand). He assembled 170 environmental base data layers for the circumpolar region using ArcGISs. These data can be used for seabird and marine habitat layers; they are publicly available for downloading from the International Arctic Research Consortium (IARC) server at UAF. All the data are described under ISO and FGDC Metadata standards (for details please contact Moritz or Huettman). This data set presents a world record of environmental GIS layers for the Arctic.

Many other model applications are also ongoing, including a high-precision global model by G. Humphries on dimethylsulfide (DMS) as seabird habitat using machine learning algorithms.

The EWHALE lab just received an invitation to the board meeting of the Global Biodiversity Information Facility (GBIF.org) in Lillehammer, Norway. This is for their recent publication on circumpolar arctic seabird modeling and conservation assessments using open-access data (Huettmann et al., *Marine*

*Biodiversity* 41:141, 2011). The authors are **Huettmann**; **Yu. Artukhin** (Laboratory of Ornithology, Kamchatka Branch of the Pacific Institute of Geography, Petropavlovsk-Kamchatskii, Russia); **O. Gilg** (Laboratoire Biogéosciences, Université de Bourgogne, France); and **G. Humphries** (Otago University, New Zealand).

## CANADA

Compiled by Ken Morgan

#### WESTERN CANADA

**Alan Burger** of the University of Victoria (UVIC) Victoria, British Columbia (BC) continues to work on Marbled Murrelet (*Brachyramphus marmoratus*) issues in BC. He contributed to the recent Canadian national status report for this species for the Committee for the Status of Endangered Species in Canada (COSEWIC.) Alan is also revising the COSEWIC status report for the Short-tailed Albatross (*Phoebastria albatrus*).

Alan is supervising **Jenna Cragg** (UVIC) in her study of Marbled and Kittlitz's (*B. brevirostris*) Murrelets on Kodiak Island, Alaska (AK). He also moonlights as a lecturer and naturalist with Aurora Expeditions on voyages to the Antarctic and Arctic.

**Harry Carter** (Carter Biological Consulting, Victoria, BC) conducted several seabird survey, monitoring, and restoration projects in California (CA) and Japan in 2012, as well as some projects in BC. He undertook a survey of Pelagic Cormorant (*Phalacrocorax pelagicus*) colonies in Barkley Sound (BC), and a reassessment of historical literature and records on burrow-nesting seabirds at Seabird Rocks (BC). The information will assist future restoration efforts by Parks Canada to reverse the impacts of predation by river otter (*Lontra canadensis*). Assisting Harry were **Spencer Sealy** of the University of Manitoba (UofM), Winnipeg,

## REGIONAL REPORTS • Canada

Manitoba (MB), **Peter Clarkson** and **Yuri Zharikov** (Pacific Rim National Park Reserve, Ucluelet, BC), and **Alan Burger** (UVIC). Harry, together with **Luke Halpin** of Simon Fraser University (SFU), Burnaby, BC and Stantec Consulting Ltd, Vancouver, BC) investigated vocalizations of Fork-tailed Storm-Petrels (*Oceanodroma furcata*) and Leach's Storm-Petrels (*O. leuconotus*) at the Gillam Islands (BC), another place where river otters have been impacting the colony heavily. **Luke Halpin** reported that he used autonomous recording methods to monitor activity patterns of storm-petrels and other nocturnal burrow-nesters, including Ancient Murrelets (*Synthliboramphus antiquus*) and Cassin's Auklets (*Ptychoramphus aleuticus*) across many remote islands in the Haida Gwaii archipelago. This work was part of restoration monitoring to determine seabird demographic responses to the eradication of invasive Black Rats (*Rattus rattus*) and Norway Rats (*R. norvegicus*) in Gwaii Haanas National Park and Haida Heritage Site.

**Mark Drever** (CWS, Delta, BC) reported that the seabird colony monitoring program of the Canadian Wildlife Service (CWS) rolled through its rotation in 2012. They revisited the permanent plots on Ramsay Island (Haida Gwaii, BC) to check on Cassin's Auklets and Ancient Murrelets. Mark and **Glen Keddie** (CWS contractor, Lasqueti Island, BC) led crews consisting of **Yuriko Hashimoto, Laurie Wilson, and Ailish Murphy** (all of CWS, Delta, BC), and **Anu Rao** (volunteer, Vancouver, BC).

**Mark Hipfner** of the Centre for Wildlife Ecology (CWE) at SFU, and Environment Canada (EC), Delta, BC, reported that summer 2012 marked the 19th year of operation of the CWE's seabird research and monitoring program on Triangle Island. The 2012 field crew consisted of Mark, **Sarah Hewitt** of Mount Royal University (Calgary, Alberta (AB)), **Elsie Krebs** (EC, Delta, BC) **Greg Jones**, (CWS, Sidney, BC), **Agathe LeBeau, Erika Lok**, and **Andrew Robinson** (all of CWS, Delta, BC), **Strahan Tucker** of Fisheries and Oceans

Canada (DFO), Nanaimo, BC, and in a special return engagement, **Ernesto the Elephant Seal** (no fixed address). They monitored breeding chronology, success, and related ecological and demographic parameters in Cassin's Auklet, Rhinoceros Auklet (*Cerorhinca monocerata*), Black Oystercatcher (*Haematopus bachmani*), and Glaucous-winged Gull (*Larus glaucescens*). Breeding success was near normal for all species except Rhinoceros Auklets, which suffered through a poor year.

Continuing an annual research program started in 2008, Hipfner, Tucker, **Glenn Crossin** of Dalhousie University, Halifax, Nova Scotia (NS), **Glen Keddie** (CWS contractor, Lasqueti Island, BC), and **Christine Rock** (BC Conservation Foundation, Vancouver, BC) visited the Rhinoceros Auklet colonies at Pine Island and Lucy Island (BC) to band and recapture adult birds as part of ongoing demographic studies investigating the population-level impacts of fisheries by-catch. They also collected blood samples and fish prey delivered by adult Rhinoceros Auklets to their nestlings in the first year of a joint EC-DFO research project investigating the ecology of predation by seabirds on salmon in BC waters."

**Ken Morgan** (CWS, Sidney, BC) led a team working on at-sea monitoring. He contracted with **Michael Bentley** (CWS contractor, Victoria, BC) to survey seabirds and marine mammals in the western Arctic (see Arctic Canada, below). Ken also conducted a three-week seabird and marine mammal survey off the west coast of BC, from Cobb Seamount to Bowie Seamount. Ken's extensive work in national-level seabird conservation groups is described under "Writing and Analysis," at the end of this regional report.

**Doug Bertram** worked with **Mark Drever, Bernard Schroeder, Dave Lindsay** and **Deborah Faust** on Marbled Murrelet population trends in Canada, based on radar count data. Doug helped to develop a Western Grebe Research Consortium, with **Peter Arcese** at the University of British Columbia (UBC) Centre for Applied Conservation Research, and **Dan Esler** at CWE.

### CENTRAL AND EASTERN CANADA

**Alex Bond** of the University of Saskatchewan (UoS), Saskatoon, Saskatchewan (SK) was on Gull Island, Witless Bay, Newfoundland (NL) to study breeding Herring Gulls (*Larus argentatus*), Atlantic Puffins (*Fratercula arctica*), Black-legged Kittiwakes (*Rissa tridactyla*) and Leach's Storm-Petrels, in collaboration with **Keith Hobson** (EC, Saskatoon, SK), **Greg Robertson** (EC, St. John's, NL), and **Sabina Wilhelm** (CWS, St. John's, NL). The main focus was on assessing maternal nutrients in eggs, gull predation on storm-petrels, mercury dynamics, and assisting with other long-term banding and marking studies. Alex also continued to work with **Jennifer Lavers** (University of Tasmania, Hobart, Australia) on plastic ingestion, toxicology, and the conservation of Flesh-footed (*Puffinus carneipes*) and Short-tailed (*P. tenuirostris*) Shearwaters in Australia.

**Tony Diamond** of the University of New Brunswick (UNB), Fredericton, New Brunswick (NB) wrote that in the summer 2012, the Atlantic Laboratory for Avian Research (ALAR, at UNB) continued long-term research and monitoring at the seabird colony on Machias Seal Island (MSI) in the Bay of Fundy (NB). The season was one of the warmest and driest on record. Highlight was the first-ever record of nesting Northern Gannet (*Morus bassanus*), but unfortunately they nested too close to a Great Black-backed Gull (*Larus marinus*) and lost their egg. Atlantic Puffins had their earliest season on record, with the peak of fledging being on 27 July, rather than in August as is normal.

A census of occupied Razorbills (*Alca torda*) nests on MSI indicated about 1700 breeding pairs (preliminary estimate), about three times the number estimated in 2000-2001. Herring (*Clupea harengus*) accounted for around 75% of Razorbills and 34% of Atlantic Puffin diets. Terns (both Arctic, *Sterna paradisaea*, and Common, *S. hirundo*) again failed to produce young; only about 600 individuals attempted to breed before

abandoning. Fifty-three Herring Gull and six Great Black-backed Gull nests on the island were destroyed by shaking and oiling the eggs, in order to reduce predation by gulls on other species. Many samples of gull feces were collected to screen for auk DNA, to assess the incidence of predation on auks in the gull population. This is the greatest number of gull nests found on MSI since 1995. Usually most gulls nest on Gull Rock, about 100 m northeast of MSI, but the presence of a Bald Eagle (*Haliaeetus leucocephalus*) roosting there early in the season probably convinced the gulls to nest on MSI instead.

Tony Diamond supervised a number of graduate projects: **Kevin Kelly's** Master's research on physiological indicators of condition in puffins continued, in collaboration with **Becky Holberton** (University of Maine, Orono, Maine), and he is now writing up. **Kirsten Bowser's** project on the role of herring in the seabird using "next-generation sequencing" continued with intensive lab work. **Erin Whidden** started a Master's project on factors affecting puffin fledging and recruitment. **Lauren Scopel** started her Master's study January to explore the fate of Arctic Terns that abandoned MSI in 2006 and spread more widely into the Gulf of Maine metapopulation.

**Michelle Fitzsimmons**, a PhD student at the Memorial University of Newfoundland (MUN) St. John's, NL, reported that **Anne Storey** (MUN) and her students completed another successful field season studying mate assessment and parental care in seabirds on Gull Island, in the Witless Bay Ecological Reserve, NL. Anne, assisted by Michelle and **Amy-Lee Kouwenberg** (PhD candidate, MUN), collected behavioral data and blood samples from a long-studied colony of Common Murres (*Uria aalge*) for continued analysis of parental care behavior and an assessment of physiological tradeoffs between mates. Michelle gathered further data for her research on the behavioral and physiological responses of Atlantic Puffin parents to changing foraging conditions, using supplemental feeding experiments and video analysis.

#### ARCTIC CANADA

**Michael Bentley** (CWS contractor, Victoria, BC) was hired by **Ken Morgan** to conduct a survey of seabirds and marine mammals from Victoria, BC to Kugluktuk, Nunavut (NU). This is the sixth year in a row that Michael has completed the survey aboard the CCGS (Canadian Coast Guard Ship) *Sir Wilfred Laurier*.

**Jennifer Provencher** (Carleton University Ottawa, ON) reported that parasite and contaminant monitoring in eiders continued for a second year in the community of Cape Dorset (NU). Jennifer and **Sam Iverson** (Carleton University) traveled to NU for the spring hunting season and collected Common Eiders (*Somateria mollissima*) and King Eiders (*S. spectabilis*) from local hunters. All birds were necropsied and will be used for Provencher's PhD work investigating the links between endoparasites and harmful pollutants.

Coastal marine bird surveys were also undertaken this summer around the communities of Cape Dorset, Iqaluit, Ivujivik and Kangirsuk (NU). Common Eider breeding surveys were the main focus, but information was also collected on three gull species—Herring, Glaucous (*L. hyperboreus*) and Greater Black-backed, as well as Red-throated Loons (*Gavia stellata*) and Canada Geese (*Branta canadensis*). Eider surveys were conducted with local guides and assistants, and included information on nest density, bear predation, human disturbance and disease monitoring, as a part of Iverson's PhD research.

Monitoring work was once again carried out on Prince Leopold Island (PLI, in northern NU) on Thick-billed Murres (*Uria lomvia*), Northern Fulmars (*Fulmarus glacialis*), Black-legged Kittiwakes, and Glaucous Gulls. **Tony Gaston** (EC, Ottawa, ON), **Mark Mallory** (Acadia University, Wolfville, NS), **Mia Pelletier** (EC, Iqaluit, NU) and **Paul Woodard** (volunteer, Yellowknife, NT) started the season in late June. Jennifer, **Alex Low** (volunteer, Ottawa, ON) and **Joanna Panipak** (EC, Iqaluit, NU) joined Woodard in late July until the

close of the season in mid-August. The ice around the island stayed until late July, and breeding for most seabirds on PLI was more than a week later than in recent years.

**Rian Dickson** (SFU) spent June and July 2012 on East Bay Island (NU), working on a long-term study of Common Eider (*Somateria mollissima*) and King Eider demography and reproductive ecology, led by **Grant Gilchrist** (EC, Ottawa, ON).

#### OTHER WORK

**Sarah Trefry** published her paper on effects of wing-tags on Magnificent Frigatebirds (*Fregata magnificens*) in the *Journal of Ornithology* (DOI 10.1007/s10336-012-0862-y). She won Best Student Presentation (from The Waterbird Society) at the 5th North American Ornithological Conference in Vancouver, BC, and is now writing up her PhD thesis.

**Doug Bertram** submitted a paper on declines and redistributions of Western Grebes (*Aechmophorus occidentalis*), with **Scott** and **Amy Wilson**, **Eric Anderson**, and **Peter Arcese**. Doug presented a paper at the North American Ornithological Congress in 2012.

In June 2012, **Gary Kaiser** released an informal history of his studies into the biology of the Marbled Murrelet between 1975 and 2005. "Marbled Murrelet: Little Lord of BC's Fjords" is an E-book intended for general readers with an interest in natural history, and for tourists who might see this bird during their Alaska cruise and want to know more about it. The E-book includes 82 photographs and maps, mostly in color. It outlines some early studies but focuses mostly on the use of telemetry and radar in coastal inlets. It is very much a regional document, with only passing reference to research in other jurisdictions. It is available through most E-book outlets for \$9.99. PDF versions and some individual figures are available from the author (gansus@shaw.ca). Gary writes: "Considering that some \$10 million was spent on this species in Canada alone some sort of

## REGIONAL REPORTS • Canada

comprehensive, peer-reviewed technical monograph is long overdue.”

**Ken Morgan** continued to work on a variety of seabird-related projects, including seabird bycatch. He chaired the regional (BC) seabird bycatch working group (WG). Other CWS/EC employees in the regional WG are **Yuriko Hashimoto** and **Laurie Wilson** (CWS, Delta, BC) and **Mark Hipfner** (EC, Delta, BC), in addition to **Karen Barry** (Bird Studies Canada, Delta, BC). Ken continues as a member of the Canadian national seabird bycatch WG; other CWS employees on this national WG are **Garry Donaldson** and **Cynthia Pekarik** of Gatineau, Québec (QC), **Jean-François Rail** (CWS, Ste-Foy, QC) and **Sabina Wilhelm** (CWS, St. John’s, Newfoundland and Labrador, [NL]). Furthermore, Ken is a member of the seabird bycatch WG in the Agreement on the Conservation of Albatrosses and Petrels (ACAP). Ken continued to chair the Canadian Albatross and Shearwater Recovery Team. Lead author **Louise Blight** (UBC, Vancouver, BC), along with Ken, **Heather Brekke** (DFO, Vancouver, BC), **Peter Hodum**, (Oikos-Ecosystem Knowledge, Seattle, WA), and **Jo Smith** (Birdsmith Consulting, Chilliwack, BC), developed a draft Management Plan for Black-footed Albatross (*P. nigripes*) in Canadian waters. This document is required under Canada’s Species At Risk Act. The Plan is in the process of being reviewed and finalised by management at Environment Canada (EC). Ken also worked on the Predictive Modeling Plan, which is led by **Patrick O’Hara** (CWS, Sidney, BC), Ken, and **Peter Davidson** (Bird Studies Canada, Delta, BC). This project will utilize at-sea seabird survey data, biophysical oceanographic data, and possibly satellite-tracking data to develop spatial-temporal predictive models for seabirds off Canada’s west coast. A first step in that process was to identify marine hotspots of seabird species that are known or suspected to be vulnerable to bycatch in commercial longline and gillnet fisheries, using Kernel Density Estimation (KDE). The

KDE analysis was led by CWS contractor **Andree Mackay** (Bedford, NS).

**Louise Blight** completed her PhD with **Peter Arcese** (UBC, Vancouver, BC) on century-long trends in population, diet and egg production in the Glaucous-winged Gull.

**Pat Baird** (SFU) has been summarizing migration data of Western Sandpipers (*Calidris mauri*) for inclusion in a monograph of Important Bird Areas in the Western Flyway (not yet published). Assistants to the project were: **Kim Mathot** and **Ron Ydenberg** (SFU); **Maribel Tejeda**, **Angel Sosa**, **Daniel Medina**, **Ovidio Jamarillo**, **Arcelys Pitti Wong**, and **Natyarit Montenegro** (all University of Panama, Panama City, Panama); **Rosabel Miro** (Panama Audubon, Panama City, Panama); **Karl Kaufmann** (Smithsonian Tropical Research Institute, Panama City, Panama); **Miguel Angel Medina Guevara**, **Eric González**, **Ulises Trinidad Gastelum**, **Marco Antonio González**, and **Jesus Salvador Martinez Bastidas** (all Universidad Tec de Monterrey, Culiacan, Mexico [MX]); **Luis Sauma Castillo** and **Guillermo Fernandez** (Unidad Académica, Mazatlán, MX); **Xico Vega** (Pro Natura/Universidad Tec de Monterrey, Culiacan, MX); **Madelyn Dillon** (U.S. Forest Service [USFS], Sedro Wooley, Washington [WA]); **Sherri Miller** (USFS, Eureka, CA); **Josh Adam** (U.S. Geological Survey, Santa Cruz, California [CA]); **John Takekawa** (USGS, San Francisco, CA); **Mike van den Tillaart** and **Paul Wigglesworth** (Lotek Inc., Newmarket, ON); **Eric Davies** and **Evan Davies**, University of Toronto, Toronto, ON); **Tim Burr** (US Navy, San Diego, CA); and **Elizabeth Kovach-Hayes** (Laurelcrest School for Girls, Long Beach, CA).

Pat assisted with Ornithological Council business at the North American Ornithological Congress (in Vancouver, BC, in August); and, as Associate Editor of *Pacific Seabirds*, she has been helping Editor **Vivian Mendenhall** with various duties. Pat is also the Book Editor for *Marine Ornithology*, and she suggested

that if you have any books that you are keen to review, to please write to her (kahiltna@gmail.com). And last but not least, Pat would like to thank **Dennis Heinemann** (Marine Mammal Commission, Bethesda Maryland), **Lindsay Young** (Pacific Rim Conservation, Honolulu, Hawaii), **Ellen Chu** (Natural Resources and Environment Government Accountability Office, Seattle, WA), **Bill Everett** (Endangered Species Recovery Group, Julian, CA), and **Mark Rauzon** (Laney College, Oakland, CA) for contributing book reviews to the upcoming issue of *Marine Ornithology*.

Pat is on the graduate committee of **Sarah Thomsen**, who is pursuing a PhD at SFU on factors influencing depredation of Xantus’s Murrelets by Barn Owls (*Tyto alba*) on Santa Barbara Island, CA. Pat was also on Toby St. Clair’s committee at SFU for the Master’s degree that he completed in October. His thesis was entitled “Heavy metals, selenium, and Pacific Dunlin: Patterns of accumulation, exposure from prey and toxicity risks.”

Pat reported publication of this paper: Draheim, H., P. Baird, and S. Haig. 2012. Temporal analysis of mtDNA variation reveals loss of genetic diversity in Least Terns (*Sternula antillarum*). *Condor* 114:145-154.

**Heather Major** (Yellowknife, Northwest Territories) wrote that she published two seabird papers in the past year: (1) Major, H.L., Hipfner, J.M., and Lemon, M.J.F. 2012. Habitat as a potential factor limiting the recovery of a population of nocturnal seabirds. *Journal of Wildlife Management* 76(4): 793-799; (2) Major, H.L., and Chubaty, A.M. 2012. Estimating colony and breeding population size for nocturnal burrow-nesting seabirds. *Marine Ecology Progress Series* 454: 83-90.

Using a 10-year dataset, **Anne Storey**’s lab at MUN has published a paper on corticosterone levels in Atlantic Puffins: Rector, M.E., A.-L. Kouwenberg, S.I. Wilhelm, G.J. Robertson, D.W. McKay, M.G. Fitzsimmons, C.R. Baker, M.L. Cameron-MacMillan, C.J. Walsh, and A.E. Storey. 2012. Corticosterone

## REGIONAL REPORTS • Canada

levels of Atlantic Puffins vary with breeding stage and sex but are not elevated in poor foraging years. *General and Comparative Endocrinology*, 178, 408-416.

**Harry Carter** examined historical literature and records of alcids in BC, southeast Alaska (AK), and elsewhere in North America. His goal was to identify earliest breeding records, and to better understand movements and non-breeding/vagrant occurrence. Cooperators were **Spencer Sealy**, **Kim Nelson** (Oregon State University, Corvallis, Oregon), and **Gus van Vliet** (Juneau, AK).

**Trudy Chatwin** (Species at Risk Biologist, BC Ministry of Forests, Lands and Natural Resource Operations, Nanaimo, BC) wrote that she hasn't done much work on seabirds this past year, other than revising a paper that was recently accepted by *Waterbirds*: "Set-back distances to protect nesting and roosting seabirds off Vancouver Island from boat disturbance." The paper is co-authored by **Alan Burger** and **Ruth Joy** (SFU).

In November 2011, **Rian Dickson** (SFU) defended her MSc thesis on the molt ecology of Surf Scoters (*Melanitta perspicillata*) and White-winged Scoters (*M. fusca*). Rian recently published the first chapter of her thesis: R.D. Dickson, D. Esler, J.W. Hupp, E.M. Anderson, J.R. Evenson, and J. Barrett. 2012. Phenology and duration of remigial moult in Surf Scoters and White-winged Scoters on the Pacific coast of North America. *Can. J. Zool.* 90: 932-944. Rian's work in Alaska is described in the Alaska Regional Report.

and Services, Inc. conducted a year-long study funded by the U.S. Fish and Wildlife Service (USFWS) to determine the annual patterns of inland activity of Marbled Murrelets (*Brachyramphus marmoratus*) at three sites in northern California (CA) that have high passage rates. The main objective of the study was to use radar counts of murrelets to determine the annual pattern of inland murrelet use, with a focus on spring and fall when numbers of inland flights are expected to be in rapid transition between the winter and breeding seasons.

**Jan Hodder** Oregon Institute of Marine Biology (OIMB) noted that in 2011 the Pelagic Cormorants (*Phalacrocorax pelagicus*, PECO) failed to occupy the breeding colony in Charleston, Oregon (OR), and she observed no breeding or nest building. This summer, PECOs returned and occupied most of the usual nesting sites observed during colony monitoring in 2001-2010. OIMB undergraduate students monitored nest contents from June 13 to August 13 at two- or three-day intervals. Forty-two nests were built and the first chick sighting occurred on 5 July. The number of nests and the number of chicks fledged per nest with eggs was no different from the long-term average.

The Marbled Murrelet Effectiveness Monitoring Program aims to assess the status and trends of Marbled Murrelet populations and nesting habitat, from the Canada-Washington (WA) border to central CA. The program has used boat-based transects in the coastal waters of this area since 2000 to monitor murrelets; other seabird species are also recorded. The goal is to estimate Marbled Murrelet populations and trends, and to evaluate the effectiveness of the Northwest Forest Plan in conserving murrelets. Marbled Murrelet Effectiveness Monitoring Program surveys in WA were led by **Marty Raphael** and **Tom Bloxton** (U.S. Forest Service-Pacific Northwest Research Station [PNW]) in Puget Sound and the Strait of Juan de Fuca; surveys on the outer coast were led by **Scott Pearson** and **Monique Lance** (Washington Department of Fish and Wildlife [WDFW]).

Oregon and California surveys were led by **Craig Strong** (Crescent Coastal Research). Population monitoring results through 2010 are in press (Miller et al., *Condor* 114[4], 2012). Other contributors to the monitoring program included **Sherri Miller**, **C.J. Ralph** and **Jim Baldwin** (U.S. Forest Service-Pacific Southwest Research Station, Berkeley, CA), **Kim Nelson** (Oregon State University [OSU]), **Andrew Shirk** (PNW), **Deanna Lynch** (USFWS, Washington Fish and Wildlife Office, Lacey, WA), and **Rich Young** (USFWS, Region 1 Office, Portland, OR). Many seasonal technicians made the population surveys possible. **Gary Falxa** (USFWS, Arcata, CA) coordinates the program. Reports with results of habitat and population monitoring are available at: <http://www.reo.gov/monitoring/mm-overview.shtml>.

The Oregon Department of Forestry (ODF) contracted with Turnstone Environmental Consultants to conduct Marbled Murrelet surveys on state lands in the Coast Range of Oregon in 5 ODF districts (Astoria, Tillamook, Western Lane, Coos Bay and West Oregon). Visiting a mixture of first, second and multi-year survey sites, surveyors conducted nearly 2000 surveys at 244 unique sites and 1212 unique stations. Murrelets were detected during 328 surveys and significant behavior was observed during 64 surveys. All surveys were conducted according to the PSG's 2003 protocol requirements. **Tom Williamson** was the Turnstone project manager and **Matt Gostin** was the ODF contract administrator. Turnstone biologists also conducted several hundred additional Marbled Murrelet surveys for multiple private landowners in the coast range of Oregon. The projects were conducted as part of the pre-management process in advance of proposed timber management plans.

**Michelle Kappes** is currently a Courtesy Assistant Professor in the Department of Fisheries and Wildlife at OSU, where she has been teaching classes online and on-campus, developing a new course on Antarctic Science and Conservation, and working to develop future seabird research projects.

## WASHINGTON AND OREGON Compiled by Don Lyons

### BREEDING POPULATION MONITORING AND SURVEYS

Peter Sanzenbacher and Brian Cooper of ABR—Environmental Research

**Peter Kappes** is working on a PhD with **Katie Dugger** at OSU, investigating the reproductive ecology and population dynamics of Adélie Penguins (*Pygoscelis adeliae*). He begins field work on Ross Island, Antarctica in November.

**Scott Pearson** (WDFW), **Tom Good** (NOAA), and **Peter Hodum** (University of Puget Sound) had a reduced field season but continued basic monitoring in their long-term study of reproductive success patterns of Rhinoceros Auklets (*Cerorhinca monocerata*) on Protection and Destruction Islands, WA (for the seventh and fifth year, respectively). In addition, monitoring plots for reproductive success were established on Smith Island, WA, also in the Washington Maritime National Wildlife Refuge Complex. Results have not yet been analyzed, but it appears that burrow occupancy by breeding pairs and fledging success were comparable to previous years on both Protection and Destruction islands.

**Rob Suryan, Cheryl Horton, Sheena Wheeler, Cherry Alexander** (all at OSU), and **Emma Nelson** (National Science Foundation intern) conducted studies of Common Murres (*Uria aalge*) at the Yaquina Head colony in Newport, OR. This is the sixth consecutive year of collaborative studies at this site among OSU, the Bureau of Land Management, and the USFWS. Reproductive success (fledglings per eggs laid) for murres was low again in 2012 (27%), as in 2011 (22%); both were greatly reduced compared to the previous four years (54-77%). Hatching phenology in 2012 was intermediate, not late as in the previous 2 years. While murres may have experienced suboptimal foraging conditions at times during 2012, the greatest reproductive loss this year, as in 2011, can be attributed to increased disturbance by Bald Eagles (*Haliaeetus leucocephalus*) and Brown Pelicans (*Pelecanus occidentalis*).

Disturbance by eagles in 2012 was initially (during incubation) more comparable to earlier years, being moderate and concentrated on a relatively small portion of the colony. However, eagle disturbances increased, became more widespread throughout the colony, and

continued through the chick-rearing period. Additionally, disturbance by pelicans greatly increased this year, from a previous high of 6% of all disturbances to 39% in 2012. Additionally, major disturbances by pelicans occurred just prior to murre fledging, causing chick mortality; over 350 chick carcasses wound up on an adjacent beach, which attracted public and media attention.

Biologists **Shawn Stephensen** of the Oregon Coast National Wildlife Refuge Complex (OCNWRC) and **Michael Szumski** (USFWS), and pilot **Charles Roberts** (Office of Law Enforcement, Burbank, WA) conducted a 10-hour coastal aerial survey of all bays, rocks, reefs, islands, coastal beaches, and waters up to 0.5 mile offshore that were not shrouded in fog, looking for California Brown Pelicans (*P. o. californicus*) on 13-14 September 2012. The proposed survey extent was from Smith River, Del Norte County, northern CA to Tunnel Island, Grays Harbor County, central WA. However due to fog and visibility issues, Port Orford south to Smith River and the Washington coastline could not be surveyed.

A total of 12,193 individual pelicans were counted in 2012, in comparison to counts during 2001 to 2011, resulting in a range of 6664 to 18,769. **Deborah Jaques** (Pacific Eco Logic) and volunteer boat operator **Curt Clumpner** conducted a Brown Pelican survey of East Sand Island by boat on the same day as the USFWS aerial survey of East Sand Island. Jaques estimated a total of 6470 pelicans, while USFWS estimated 7000. East Sand Island continues to be the site of the largest congregation of pelicans

during the summer on the Oregon coast.

**Shawn Stephensen** and **David Ledig** (OCNWRC) conducted a 10-hour aerial seabird colony survey by Bell Jet Ranger III helicopter (pilot **Mike Everett**, Northwest Helicopters Olympia, WA) on 11 and 13 June 2012 of the entire Oregon coast. All Common Murre, Brandt's Cormorant, and Double-crested Cormorant colonies, excluding cormorant colonies within the Columbia River estuary, were photographed using digital cameras, and birds were counted on the digital images utilizing GIS computer software. Thousands of digital images were organized and archived for future reference. Colony attendance by murres was slightly depressed in comparison to previous years. However, murres attempted to nest at several historical colony sites that had not been attended the last ten years.

**David Ledig, Bill Bridgeland, Heather Leftin, Rebecca Chuck, Michael Szumski, and Scott Neumann** of the OCNWRC conducted a census of Leach's Storm-Petrels (*Oceanodroma leucorhoa*) on Goat Island, Hunters Island, Saddle Rock, and North Crook Point Island within the refuge. A breeding population estimate was obtained by estimating burrow density and burrow occupancy rates, and multiplying by nesting area (calculated with the aid of Light Detecting and Ranging images; Table 1). Multiple 1m x 1m quadrats were sampled along permanent transects on each island, which permits repeated surveys using the same methods, allowing between-year comparisons. Hunters Island and Goat Island populations have declined considerably when compared

TABLE 1. 2012 Estimates of Leach's Storm-Petrel breeding populations (individual birds; standard error in parentheses) at various islands within the Oregon Coast National Wildlife Refuge.

Location	2012 estimate	2009 estimate
Goat Island	184,530 (±22,052)	267,201 (±43,138)
Hunters Island	28,930 (±7,602)	55,946 (±8,443)
Saddle Rock	2,504 (±1,225)	634 (±588)

## REGIONAL REPORTS • Washington and Oregon

to 2009 data; however, the Saddle Rock population has increased by an order of magnitude (Table 1). Prior to 2009, storm-petrels were surveyed on Goat Island, Hunter Island, and Saddle Rock in 2008, 1988, 1979, 1973, and 1966. North Crook Point Island was surveyed in 2012 for the first time since 1988. The population estimate for this site is not complete, since the nesting area still needs to be calculated.

**Tim Halloran** (USFWS volunteer) and **Shawn Stephensen** conducted a population status assessment of Tufted Puffin (*Fratercula cirrhata*) at Haystack Rock, Cannon Beach, within the refuge. The project also included a pilot study to evaluate the feasibility of monitoring additional reproductive parameters at the island, such as breeding phenology and data collection success from shore-based vantage points. A precise breeding population estimate was obtained by determining total numbers of puffins attempting to nest, based on the number of active burrow sites used during an intensive census period in early spring when puffins are most visible. In 2010, they found 122 breeding individual birds, with a 58% breeding success, and discovered 377 burrows or potential nest sites at Haystack Rock. They have not completed the 2012 data analysis, although initial data review indicate 40 to 50 puffins appeared to have nested. They also documented many negative interactions with gulls and disturbances by eagles, as well as interesting social behaviors between puffins.

**Shawn Stephensen, Octavia Sola, and Matt Haynes** of the Oregon Coast National Wildlife Refuge Complex conducted a cormorant colony survey from Newport to Boiler Bay, Oregon. All nesting Pelagic, Double-Crested, and Brandt's Cormorant nests were counted from a boat with binoculars. This survey has been conducted annually since 1988. Cormorant numbers were comparable to previous years, with the exception of the Newport Bridge, where fewer cormorant nests were observed due to construction activities.

In response to documented mammalian predation on some near-shore island seabird colonies along the Oregon south coast, OCNWRC staff (**David Leding** and **Bill Bridgeland**) have been monitoring predator activity and seabird response for several years. In 2012, the existing monitoring program was intensified on selected colonies, based on their vulnerability to mainland mesocarnivore visitation (i.e. proximity to the mainland) and their known history of predator presence and activity. The objectives were to document predator species, timing of activity, and seabird response, and to document management response to predator damage. Methods included regular field surveys to document changes in configurations of surface-nesting seabird colonies (which might indicate disturbance), predator signs on adjacent mainland intertidal areas, and on-island inspections when those could be done without disturbing nesting birds. In addition, they installed 14 trail cameras on four islands, and two others on adjacent mainland locations to directly photograph seabirds or predator access trails. Cameras located on colonies were equipped with external batteries and set to take photos every minute for 12 hours (dusk to dawn) for the majority of the breeding season. The cameras were not available to download photos until the birds completed nesting activities. Other cameras directed at predator access trails were programmed for motion-detection photography and/or time lapse, and memory cards and batteries were retrieved periodically throughout the breeding season.

Results to date include photographs documenting predation or disturbance by raccoons (*Procyon lotor*), river otters (*Lontra canadensis*), mink (*Neovison vison*), or some combination of those species on three of the four islands monitored. On one island, analysis of photography strongly implicated raccoon predation as the primary cause of abandonment of a Common Murre and Brandt's Cormorant colony early in the egg incubation stage. Because of this, a raccoon removal program was subsequently initiated. On two other islands

that had nesting Leach's Storm-Petrels, river otters preyed upon adult birds and nests, but it is unclear whether there was a significant impact on the colonies.

Analyses of the several hundred thousand photographs produced by all the cameras are not complete, but the researchers believe that these cameras can provide considerable insight into the source, chronology, and intensity of predator disturbance to nesting seabirds. They intend to continue camera surveillance and timely predator control on these colonies next year.

### SEABIRD-FISHERY INTERACTIONS

In December 2011, **Amilee Wilson** of National Oceanographic and Atmospheric Administration (NOAA)-Fisheries initiated a Geographic Information Systems (GIS) mapping project to examine whether there was any correlation between declining trends in Marbled Murrelet populations and increasing gillnet and setnet fishery landings in Puget Sound, WA. This project is a followup to her presentation titled, "Entanglement Effects on Marbled Murrelet (*Brachyramphus marmoratus*) in Salish Sea Salmon Fisheries in the Pacific Northwest" at the 39th Annual Pacific Seabird Conference in Oahu, Hawai'i. The GIS mapping project will overlay Marbled Murrelet densities with fisheries catch effort by marine catch areas to examine seasonal variations in foraging and fishing trends, but also to identify areas of concern where increased fisheries and high murrelet densities coincide. The project will examine murrelet density and gillnet fisheries catch data from 2001 to 2010. Cooperators include **Gary Falxa** and **Martin Raphael** (U.S. Forest Service), **Deanna Lynch** and **Nancy Brennan-Dubbs** (USFWS), the Northwest Indian Fisheries Commission, and WDFW and Wildlife. This work is funded by NOAA and is expected to be completed by the end of 2012.

**Elizabeth Phillips** is a PhD student in the School of Aquatic and Fishery Sciences, at the University of Washington (UW). She is examining the influence of river plumes, especially the Columbia

## REGIONAL REPORTS • Washington and Oregon

River plume, on seabird, forage fish, and juvenile salmonid density distributions. She is using data collected from at-sea surveys, including acoustic backscatter recorded on a four-frequency quantitative fisheries echosounder. She is working in collaboration with **Jen Zamon** (NOAA-Fisheries) and others at both the Northwest and Southwest Fisheries Science Centers

**Lindsay Adrean** (Oregon Department of Fish and Wildlife [ODFW]) collected stomach samples of Double-crested Cormorants (DCCO) in Tillamook Bay, for the first diet study of these birds on the Oregon coast outside of the Columbia River estuary. The goal of this study is to determine the predation impact on juvenile salmonids. Lindsay collected data on DCCO colony attendance as well as distribution and density of cormorants foraging in estuaries of the mid and north Oregon coast. Bald eagle disturbances were common at north coast breeding colonies. Aerial photos will be counted in the coming months for colony size estimates

**Ed Melvin, Troy Guy, and Sarah Jennings** (Washington Sea Grant) and **Rob Suryan** (OSU) continue to promote seabird conservation in CA, OR and WA fisheries. They combined at-sea surveys and satellite telemetry data for north Pacific albatrosses from a host of PSG collaborators with fishery data from the Northwest Fisheries Science Center (NWFSC), to establish a framework for albatross conservation in west coast groundfish fisheries. A manuscript is in preparation. They found that the longline fishery targeting sablefish (*Anoplopoma fimbria*) north of 36° north latitude presents the greatest threat to albatrosses, based on the death of a Short-tailed Albatross (*Phoebastria albatrus*) in 2011 (the first for this fishery), high levels of albatross-fishery overlap, and chronic annual Black-footed Albatross (*Phoebastria nigripes*) mortality. Based on this analysis, the USFWS is proposing that mitigation measures be required for larger vessels. With funding from the NWFSC and the NOAA-Fisheries Northwest Region, and pending funding from

the National Fish and Wildlife Foundation and the Packard Foundation, they plan to develop effective seabird bycatch mitigation measures for this fleet. They will also provide outreach at fishing ports to raise awareness on the need for albatross conservation and how to achieve it. They are working with NOAA-Fisheries and the Pacific States Marine Fisheries Commission to provide streamer lines, designed specifically for the west coast sablefish vessels, at no charge. These could jump-start voluntary use of seabird bycatch mitigation measures.

### FISHERY INTERACTIONS, COLONIES, ETC.

**Dan Roby**, of the U.S. Geological Survey (USGS)-Oregon Cooperative Fish and Wildlife Research Unit at OSU, **Jessica Adkins, Kirsten Bixler, Stefanie Collar, Tim Lawes, Pete Loschl, Don Lyons, Allison Mahoric, Allison Patterson, Adam Peck-Richardson, Yasuko Suzuki, and James Tennyson** (OSU), **Ken Collis, Brad Cramer, Allen Evans, Mike Hawbecker, and Nathan Hostetter** (Real Time Research [RTR]), and numerous seasonal technicians and volunteers continued to study interactions between seabirds and forage fish in the Pacific Northwest. This study was funded by the Bonneville Power Administration and the U.S. Army Corps of Engineers (USACE). Partners were the interagency Caspian Tern Working Group (CTWG), including NOAA-Fisheries, USACE, USFWS, ODFW, WDFW, Idaho Department of Fish and Game, Columbia River Inter-Tribal Fish Commission, and others.

This research continued to place a strong emphasis on the effects of predation on juvenile salmonids (*Oncorhynchus* spp.) in the Columbia River basin. However, research was not only conducted on East Sand Island in the Columbia River estuary, the largest known breeding colonies of Caspian terns (*Hydroprogne caspia*) and Double-crested Cormorants on the Pacific coast, but also on colonies of Caspian Terns, Double-crested Cormorants, American White Pelicans (*Pelecanus erythrorhynchos*), and several gull species (*Larus* spp.) throughout the region.

In 2012, the size of the Caspian Tern colony on East Sand Island was approximately 6400 pairs, down from approximately 7000 pairs in 2011. Although the terns at East Sand Island experienced a complete breeding failure in 2011, the colony reformed in the spring of 2012 and successfully raised some young. Disturbance by Bald Eagles, and depredation of tern eggs and chicks by Glaucous-winged/Western Gulls (*Larus glaucescens* x *L. occidentalis*) continued to negatively impact breeding success, but not to the extent that was observed in 2011. The 2012 productivity rate (0.06 fledglings/pair) is similar to that observed in 2010 (0.05 fledglings/pair), but is much lower than was observed during the preceding years of monitoring (0.56). USACE further reduced the amount of suitable Caspian Tern nesting habitat on East Sand Island in 2012; the nesting density at the site was at the highest level recorded in the Columbia River estuary (1.06 nests/m<sup>2</sup>).

A pilot study was initiated in 2011 to test strategies for limiting the size of the East Sand Island cormorant colony, and it was expanded in 2012. Cormorants were successfully dissuaded from using this 62% of their 2010 nesting area. However, the size of the Double-crested Cormorant colony on East Sand Island in 2012 was still approximately 12,300 nesting pairs, which was similar to the number on the island in 2011 (ca. 13,000 pairs). Frequent Bald Eagle disturbance and predation on the East Sand Island cormorant colony continued in 2012, and preliminary estimates of cormorant productivity (1.26 fledglings/pair) was similar to 2011 (1.33 fledglings/pair), although lower than in preceding years (1.92–2.80 fledglings/pair during 2006–2010).

East Sand Island continues to be the largest known post-breeding roost site in the Pacific Northwest for California Brown Pelicans. Over 10,500 Brown Pelicans were counted on the island in late July. The East Sand Island Brandt's Cormorant colony continued to grow, with 1685 pairs in 2012, up from 1490 pairs in 2011 and 985 in 2010. American

White Pelicans initially colonized Miller Sands Spit in the Columbia River Estuary in 2010; they nested there again 2011 and 2012. This year approximately 125 pelican pairs nested on the spit, up from 100 in 2011.

In 2012, the two largest colonies of Caspian Terns in eastern Washington were again at Crescent Island, on the Mid-Columbia River near its confluence with the Snake River, and at Goose Island in Potholes Reservoir. These colonies had ca. 420 and 460 pairs respectively. Productivity was greater at Crescent Island (0.19 fledglings/pair) than Goose Island (0.08 fledglings/pair), but lower for both than during recent years. At least several hundred Caspian Terns also attempted to nest at multiple sites in coastal Washington; however, they fledged very few young at those sites.

Foundation Island, located 9 km upriver from Crescent Island, is the site of the largest Double-crested Cormorant colony on the mid-Columbia River. This tree-nesting colony consisted of at least 390 pairs in 2012, similar to recent years. The largest Double-crested Cormorant colony on the Columbia Plateau, however, continues to be at Potholes Reservoir, where around 1000 pairs nested in trees in 2012.

Implementation of the Caspian Tern Management Plan continued in 2012. Available habitat at the East Sand Island colony was incrementally decreased to 1.58 acres, down from 2.0 acres in 2011. One newly constructed island became available in the Malheur National Wildlife Refuge in southeastern Oregon. A total of seven islands constructed by the U.S. Army Corps of Engineers in recent years was available in 2012 including two in the Klamath River basin in northeast California; the rest were in Oregon: two at the Summer Lake Wildlife Area, one at Crump Lake, and one at Malheur Lake, and one at Fern Ridge Reservoir near Eugene. Islands at six of these sites (all except Fern Ridge Reservoir) were used by nesting terns. A total of 780 pairs of Caspian Terns nested at these restoration sites in 2012, with highly variable productivity. Terns nesting at islands

in Sheepy Lake (0.66 fledglings/pair), Crump Lake (0.43 fledglings/pair), and Malheur Lake (0.84 fledglings/pair) successfully fledged young, while all other sites failed to produce any fledglings. Limiting factors in 2012 varied by site, but included possibly poor forage fish availability, nest depredation by gulls, and nocturnal disturbance by raccoons.

(*Larus occidentalis*) also continued to have extremely low breeding success and high rates of intraspecific predation.

This was the fifth year since California Gulls (*L. californicus*) began breeding on SEFI, but numbers were down and they once again failed to fledge any young. Juvenile Brown Pelicans (*Pelecanus occidentalis*) were observed landing amongst some murre colonies during late June, causing a significant amount of egg and chick loss. Among the non-seabird species, neither the Peregrine Falcons (*Falco peregrinus*) nor the Common Raven (*Corvus corax*) that have bred on the island the past three years were successful this season. Canada Geese (*Branta canadensis*) nested on the Farallones for the third consecutive year but failed to produce any young. A Northern Gannet (*Morus bassanus*) was discovered by **Pete Warzybok** on April 25th and continued at the island throughout September. This is thought to be the first record for the species in the Pacific.

**Michelle Hester, Ryan Carle, Jessie Beck, and David Calleri** (Oikonos) continued long-term monitoring of the breeding seabird community at Año Nuevo Island. Though there was a strong upwelling anomaly during the summer months in 2012, lack of wind relaxation may have contributed to dispersal of prey offshore, away from this nearshore colony. Rhinoceros Auklet chick diet was dominated by market squid (*Doryteuthis opalescens*) and Pacific saury (*Cololabis saira*), with very few juvenile rockfish or northern anchovy (*Engraulis mordax*). Productivity of Rhinoceros Auklet was near the long-term average (1995-2012). Productivity of Western Gulls (*L. occidentalis*), Brandt's Cormorants, and Pelagic Cormorants was also near the long term averages for this colony, despite some nest abandonment by Brandt's Cormorants. Record numbers of Cassin's Auklets (>60 individuals) bred in 2012, with above average productivity and double-clutching occurring for the 3rd year in a row. Pigeon Guillemot breeding pairs remained low (<10 pairs) in 2012. Black Oystercatchers suffered near-total breeding failure, probably due to nest predation by ravens and gulls.

## NORTHERN CALIFORNIA

Compiled by **Jessie Beck** and **Hannah Nevins**

### COLONY MONITORING

**Russ Bradley, Pete Warzybok, Ryan Berger** (PRBO Conservation Science) and collaborator **Gerry McChesney** (U.S. Fish and Wildlife Service, USFWS) monitored population size, reproductive success and diet for 13 species of breeding seabirds on Southeast Farallon Island (SEFI), including gulls (*Larus* spp.), storm-petrels (*Oceanodroma* spp.), cormorants (*Phalacrocorax* spp.), murres (*Uria* spp.), auklets (*Ptychoramphus*, *Brachyramphus* spp.), Black Oystercatcher (*Haematopus bachmani*), Tufted Puffin (*Fratercula cirrhata*), and Pigeon Guillemot (*Cephus columba*). 2012 was another mixed year on the Farallones. There was strong upwelling throughout the spring and summer, leading to high ocean productivity and an abundance of krill (*Euphausiacea*) around the islands. The krill-feeding Cassin's Auklets (*Ptychoramphus aleuticus*) exhibited high productivity for the third consecutive year and had a high rate of double brooding. A high abundance of juvenile rockfish (*Sebastes* spp.) in chick diets also led to above average breeding success for Common Murres (*U. aalge*), Rhinoceros Auklets (*Cerorhinca monocerata*) and Pigeon Guillemots. In contrast to the high productivity for some species, cormorants suffered nearly complete breeding failure. Brandt's (*P. penicillatus*) and Pelagic (*P. pelagicus*) Cormorants both exhibited a strong early breeding effort, only to abandon nests and chicks in late June. Western Gulls

## REGIONAL REPORTS • Northern California

The San Francisco Bay Bird Observatory (SFBBO) has been monitoring California Gulls since they began nesting in the San Francisco Bay in 1980. In December 2010, the levees surrounding the former salt pond, A6, were breached and the pond was restored to tidal action. This pond formerly hosted the largest California Gull colony in the San Francisco Bay area, with 26,000 gulls nesting there at its peak in 2008. This breeding season, the A6 gulls needed to find a new place to nest, now that A6 was inundated with water at every high tide. Many of the gulls displaced from A6 joined with other existing colonies around the South Bay and the SFBBO documented an increase in most colonies. Over 12,000 gulls began nesting in a new colony in the ponds northwest of the Alviso Marina County Park. The new colony is located within the Don Edwards San Francisco Bay National Wildlife Refuge and is the site of an historic California Gull colony which they had abandoned in 2006. Despite an increase in most of the existing colonies, the number of nesting California Gulls in the South Bay decreased from over 46,000 gulls in 2010 to 38,000 nesting gulls in 2011. Contact: **Caitlin Robinson-Nilsen**, [cnilsen@sfbbo.org](mailto:cnilsen@sfbbo.org)

### THREATENED AND ENDANGERED SPECIES

The Marbled Murrelet Effectiveness Monitoring Program monitors the status and trend of Marbled Murrelet (*Brachyramphus marmoratus*) populations and nesting habitat, from the Washington—Canada border to San Francisco. **Gary Falxa** (USFWS, Arcata, CA) coordinates the program. 2012 surveys in Oregon and California (CA) were led by **Craig Strong** (Crescent Coastal Research). California researchers involved in the program include **Sherri Miller**, **C.J. Ralph**, and **Jim Baldwin** (U.S. Forest Service-Pacific Southwest Research Station); the work also depends on researchers in Oregon and Washington, plus the many seasonal technicians who make the population surveys possible. Further information on the program, participants, and data is in the Washington-Oregon regional report.

**Steve Singer** (Environmental and Ecological Services, Santa Cruz) continues to work on Marbled Murrelet habitat issues in the Santa Cruz Mountains of California (the Effectiveness Monitoring Program's Recovery Zone 6). He is using stereo photos to map the locations of all potentially suitable nesting stands on private forest land in much of Zone 6. Using such factors as stand size, spatial distribution, and extent of anthropogenic influences, he is also delineating the most important murrelet nesting areas for possible future acquisition. The project is sponsored by the Sempervirens Fund, a local land conservancy.

Humboldt Redwood Company, LLC (HRC) continued conservation activities for the Marbled Murrelet under the company's Habitat Conservation Plan (HCP). Project leaders were **Sal Chininni** and **Mark Freitas** of HRC. The HCP requires tracking of murrelet occupancy and numbers over time using both radar and audio-visual (AV) survey techniques. Surveys were continued in 2012 at the Headwaters Forest Reserve (HFR), Humboldt Redwoods State Park (HRSP), and the Marbled Murrelet Conservation Areas (MMCAs) on HRC forestlands with the collaboration of Mad River Biologists, O'Brien Biological Consulting, and Adam Brown. Since the inception of HCP monitoring (1999), Marbled Murrelets have shown behaviors (below-canopy flight or circling) consistent with occupancy of the area in the monitored MMCAs and Reserve stands. In 2012, surveyors conducted 139 surveys at 33 stations and observed occupied behaviors in all monitored Reserves and all MMCAs with the exception of the Bell-Lawrence MCCA. Radar surveys track murrelets traveling to and from nesting areas within the MMCAs and Reserves. Radar counts are considered indices of the breeding population, because non-breeding murrelets do not fly inland. In 2012, 56 radar surveys were conducted at 14 sites. Analysis of the 2012 data has not yet been conducted. The 2011 data indicated that after nine years of monitoring there has been an increase in radar counts in the MMCAs but not in the Reserves since the 2002 baseline.

**Caitlin Robinsin-Nilsen** (SFBBO), along with **Cheryl Strong** (USFWS) monitored breeding Western Snowy Plovers (*Charadrius alexandrinus nivosus*) within the interior of the San Francisco Bay. They determined the fate for 224 Snowy Plover nests in 2011 in the South Bay. Out of these nests, 107 hatched, 108 were depredated, seven were abandoned, and two were flooded. California Gulls continued to be the main predator of concern for Snowy Plovers in the San Francisco Bay (see Colony Monitoring).

### FORAGING ECOLOGY, PELAGIC STUDIES

**Corey Clatterbuck** and **Anne Cassell**, two of Shaffer Master's students at San Jose State University (SJSU) are examining incubation behavior and diets of Western Gulls (*Larus occidentalis*) at Año Nuevo Island. **Emma Kelsey**, a Master's student under Shaffer, is studying incubation routines at the South East Farallon Islands, in collaboration with **Russell Bradley**, **Pete Warzybok**, and **Jamie Jancke** of PRBO Conservation Science. **Ryan Carle** began a MS project at Año Nuevo Island on Rhinoceros Auklet (*Cerorhinca monocerata*) diet and reproduction. He is using stable isotopes to investigate carry-over effects of spring and winter diet on breeding parameters, and tracking seasonal trophic shifts in this species. He is working under **Jim Harvey** at Moss Landing Marine Laboratories, and in conjunction with **Michelle Hester** and **Jessie Beck** at Oikonos Ecosystem Knowledge.

**Melinda Conners**, doctoral student of **Scott Shaffer** at the University of California at Santa Cruz (UCSC) has completed fieldwork for her dissertation at Tern Island, French Frigate Shoals, Northwest Hawaiian Islands, on the diets and foraging ecology of albatrosses (*Phoebastria* spp.). A new student, **Morgan Gilmour**, took over fieldwork there in 2011. Additionally, Schaffer's group is studying boobies (*Sula* spp.) at Tern Island and albatrosses on Midway Atoll and Laysan Islands. More information is in the Hawai'i Regional Report.

## REGIONAL REPORTS • Northern California

**Rachael Orben** has completed fieldwork for her doctoral thesis with Scott Shaffer at UCSC on the winter distribution and ecology of kittiwakes (*Rissa* spp.) and Thick-billed Murres (*Uria lomvia*) at three Bering Sea colonies; more information is in the Alaska Regional Report. **Caitin Kroeger** is working under Shaffer on the foraging ecology and energetics of two albatross species at Campbell Island in New Zealand; more information is in the regional report for Oceania.

### POLLUTION, SPILL PREPAREDNESS, AND MORTALITY

**Jeff Davis, Phil Capitolo, Dave Lewis, Bill Henry, Peter Gaede, and Glenn Ford** (UCSC; **Breck Tyler**, Principal Investigator) continued to conduct aerial surveys of marine birds and mammals over California continental shelf waters in 2012. They were under contract with Office of Spill Prevention and Response (OSPR) of the California Department of Fish and Game (CDFG), **Laird Henkel** and **Holly Gellerman**. The surveys are designed to collect baseline distribution and abundance data and maintain rapid-response capabilities for oil spills. During the past year, surveys were conducted from Del Norte to San Diego counties. This team, with **Glenn Ford**, Principal Investigator, along with **Mike Parker**, also continued to provide aerial survey support for studies related to the *Deepwater Horizon* oil spill (see regional report for Non-Pacific US).

**Kyra Mills** (Oiled Wildlife Care Network [OWCN], University of California, Davis [UCD]) is studying post-release survival and migratory patterns of Western Grebes (*Aechmophorus occidentalis*) captured in San Francisco Bay. Collaborators are **Joseph Gaydos**, **L. Ignacio Vilchis** (SeaDoc Society), **Christine Fiorello**, **Emily Whitmer**, **Michael Ziccardi** (OWCN), and **Susan De La Cruz** and **Dan Mulcahy** of the U.S. Geological Survey (USGS). They implanted satellite transmitters in 10 Western Grebes captured in early December 2010 in San Francisco Bay,

California. The main goal of this study was to provide oiled wildlife responders with a technique for monitoring post-release survival and movement of birds impacted by oil spills, and to provide novel information on Western Grebe migration between their freshwater summer breeding grounds and their marine wintering environments. One year post-release, two grebes are still transmitting. Locational data collected during the time when birds were transmitting showed that most birds remained within the San Francisco Bay, suggesting high winter site fidelity. The data also revealed one bird's migration path to Upper Klamath Lake in Oregon in July and back to San Francisco Bay in November.

**Hannah Nevins** and **Stori Oates** are working on a multi-year study on thermal dynamics of oiled seabirds during the rehabilitation process. Focusing on alcids and grebes, they are using an infrared camera and thermal Passive Integrated Transponder (PIT) tags to measure changes in heat loss relative to environmental, behavioral changes throughout the 24-hour day. This project is supported by CDFG's Oil Spill Response Trust Fund, through the OWCN. Other collaborators were two International Bird Rescue centers: San Francisco Oiled Wildlife Care and Education Center, Fairfield, CA, and Los Angeles Oiled Bird Care and Education Center, San Pedro, CA.

In 2012, **Josh Adams, Jonathan Felis**, and **John Takekawa** (USGS, Western Ecological Research Center) worked with observers **John Mason** (Environment International, LCC) and **Jeff Davis** (Moss Landing Marine Labs [MLML]) and Calibri Ecological Consulting to quantify seabird and marine mammal distribution in the northern California Current region. Their work was for the U.S. Bureau of Ocean Energy Management (BOEM), through their Pacific Continental Shelf Environmental Assessment program (PaCSEA). Aircraft surveys were used to enumerate seabirds and mammals, along with oceanographic remote-sensing equipment—including hyperspectral radiometric

sensors—provided by **Raphe Kudela** and **Jennifer Broughton** (UCSC). The goal is to map biodiversity and associated ocean habitats from Fort Bragg, CA to Grays Harbor, Washington. PaCSEA will provide this updated scientific data to federal resource managers. **Adams** also initiated a project for BOEM to evaluate seabird vulnerability for input to marine spatial planning associated with future alternative energy development in outer continental shelf waters of the Pacific.

**Erica Donnelly-Greenan** completed her thesis at MLML (SJSU) in May 2012. Her thesis was entitled "Prey and plastic ingestion of pacific Northern Fulmars (*Fulmarus glacialis*) collected in Monterey Bay, California." She is currently an associate researcher at MLML, working with **Hannah Nevins** and **Jim Harvey** on the Coastal Ocean Mammal and Bird Education and Research Surveys (BeachCOMBERS) project as a biologist, for Oikonos Ecosystem Knowledge on the BioPs project, and as a scientific aide at CDFG's Marine Wildlife Veterinary Care and Research Center in Santa Cruz, CA (MWVCRC).

Donnelly-Greenan also reported that she and **Hannah Nevins** continue to coordinate BeachCOMBERS, along with Principal Investigator **Jim Harvey** (MLML). The program uses citizen scientists to systematically survey beaches in the Santa Cruz, Monterey, and San Luis Obispo Counties to determine human and natural impacts to marine birds and mammals in the Central California Coast marine area. They completed a volunteer training session at MLML in September. Additionally, they will be implementing a BeachCOMBERS program in November that covers much of southern California (see that regional report for more information).

The Marine Seabird Health Study is entering its seventh year, coordinated by **Hannah Nevins**, with **Melissa Miller**, **Laird Henkel**, **Erica Donnelly-Greenan**, and **Jessie Beck** at MWVCRC. The project aims to provide a quantitative demographic assessment of disease, chronic oiling, plastics and other mortality factors affecting seabirds in California, using

birds collected during beach surveys, from fishery bycatch, and from rehabilitation centers. This study provides a regional information center for federal, state, and local resource managers, and is supported in part by OSPR, MLML, UCD's Wildlife Health Center, Oikonos Ecosystem Knowledge, National Oceanographic and Atmospheric Administration (NOAA)—Fisheries, and USFWS. Since 2005, the program's staff have necropsied more than 3400 specimens representing 76 species.

In 2012, the Central Coast Marine Seabird Health Study, in collaboration with **Michelle Hester** (Oikonos) and supported by the National Fish and Wildlife Foundation and NOAA, continued investigating the demographics of seabird bycatch and the incidence of plastic ingestion by Northern Fulmars and other species collected by NOAA's observer programs ion Hawai'i and Alaska.

In 2011, The Gulf of the Farallones Beach Watch (run jointly by the Farallones Marine Sanctuary Association and the Gulf of the Farallones National Marine Sanctuary, San Francisco) maintained data collection of beached and live birds, marine mammals and oil deposition in the central CA coast for the 18th year. The Common Murre was the most abundant beached bird species; it had a deposition rate of 0.165 per km, compared to a cumulative rate of 0.306 per km for all previous years (1993-2010). This winter they initiated an effort to geo-reference documented samples (beached birds, mammals, and oil) for use in damage assessment and spatial analysis of beached bird deposition. For more information contact **Kirsten Lindquist** (Farallones Marine Sanctuary Association), [klindquist@farallones.org](mailto:klindquist@farallones.org), or **Jan Roletto** (Gulf of the Farallones National Marine Sanctuary), [Jan.Roletto@noaa.gov](mailto:Jan.Roletto@noaa.gov). Their data are available online at <http://www.farallones.org/BeachData/BeachWatchData.php>

#### CONSERVATION AND RESTORATION

**Bill Henry** (UCSC) and **Josh Adams** (USGS) are working to restore

the native plant community along West Cliff Drive in Santa Cruz. This heavily trafficked coastal trail has scant remnants of historical plant and animal diversity, and the trailside is buried under a mono-crop of invasive introduced ice plant (*Carpobrotus edulis*). To do this, Henry and Adams are working with community schools to grow plants, and to participate in hands on restoration, long-term stewardship, monitoring of local coastal native habitat, and enhancement of seabird nesting and roosting habitat. The project is a collaborative effort with Oikonos Ecosystem Knowledge, USGS, California Native Plant Society, City of Santa Cruz, California State Parks, and UCSC's Natural Reserves, Greenhouses, and Arboretum.

#### EDUCATION AND OUTREACH

The Seabird Protection Network (Network) is administered by Gulf of the Farallones National Marine Sanctuary (NOAA) and coordinated by **Sage Tezak**. The goal of the Network is to minimize levels of human disturbance (i.e., airplanes, boats) on breeding colonies and roosting locations of seabirds throughout the California coast. This year, the Network released a guide that provides direction on how to begin a chapter of the Seabird Protection Network. The Network is poised to address a problem that is prevalent throughout the entire California coastline—human disturbance to marine wildlife. A wildlife disturbance reporting form is also available to help resource managers conduct targeted outreach, track repeat offenders, and enforce wildlife regulations. For more information contact California. [Seabirds@noaa.gov](mailto:Seabirds@noaa.gov)

#### OTHER STUDIES

**Josh Adams** (USGS) is collaborating in tracking studies on several species of seabirds in the Galápagos Islands, Ecuador. For more information see the Latin America report.

#### SOUTHERN CALIFORNIA

Compiled by **Jennifer Boyce**

#### COLONY STUDIES

**Charlie Collins** of California State University Long Beach limited his field activities in 2012 to reading bands for a long-term survival study. He worked on nesting Caspian Terns (*Hydroprogne caspia*) in the Port of Los Angeles and Black Skimmers (*Rynchops niger*) in Huntington Beach. One 20-year-old of each of these species was located, as well as several others in 16–19 year age categories.

**Dan Robinette** of PRBO Conservation Science has completed the group's 14th year of coastal seabird monitoring at Vandenberg Air Force Base [VAFB], Lompoc. Focal species include Brandt's Cormorant (*Phalacrocorax penicillatus*), Pelagic Cormorant (*Phalacrocorax pelagicus*), Pigeon Guillemot (*Cephus columba*), Western Gull (*Larus occidentalis*), Black Oystercatcher (*Haematopus bachmani*), and the endangered California Least Tern (*Sternula antillarum browni*). Populations of Pigeon Guillemots and both cormorant species continued to grow during the time series, while the oystercatcher population remains stable. The Western Gull population reached a plateau in 2008-2010 and has declined in recent years. The Least Tern population has been highly variable through the time series, but has remained close to the long-term average since 2009. Breeding productivity in 2012, measured as fledglings produced per breeding pair, was close to the long-term average for all species besides oystercatchers and gulls. Oystercatcher productivity has been below average since 2007, and gull productivity has been mostly below average since 2004.

In addition to Vandenberg Air Force Base, PRBO has expanded its coastal seabird monitoring program to several sites between Bodega Head (Sonoma County) and the Tijuana River Estuary (San Diego County), including sites on Santa Cruz Island. This work is in support of the Marine Life Protection Act

## REGIONAL REPORTS • Southern California

Initiative and the Seabird Protection Network. The goal of this program is to understand how seabirds use coastal and nearshore habitats, especially in relation to California's new network of marine protected areas (MPAs). The coastal seabird surveys document: (1) breeding population sizes and distribution, (2) foraging rates inside and outside of MPAs, (3) annual breeding productivity, and (4) rates of human-caused disturbance at breeding and roosting sites. Additionally, Least Tern diet is being documented at breeding sites located inside and outside of MPAs. A total of 17 MPAs are being investigated. Project staff include **Dan Robinette, Julie Howar, Carly Baker, Bernardo Alps, Cassie Bednar, Abigail Cannon, Abram Fleishman, Lynne Hargett, Lauren De Maio, Johanna Anderson, and Melinda Mohamed**. Please email Dan Robinette drobinette@prbo.org for additional information.

**Martin Ruane** (Natural Resources Manager), **Francesca Ferrara** (Natural Resource Specialist), and **Rebecca Kelley** (Natural Resource Specialist), all of the US Navy report that nesting colonies of California Least Terns have been intensively monitored since 1996 at Naval Base Ventura County (NBVC), Point Mugu. Monitoring is conducted from blinds and by walking through the colony to mark nests. Adaptive predator management is done each season to aid in recovery. During the 2012 nesting season, an estimated 608 pairs of least terns initiated 844 nests. Number of nests was the highest recorded, but overall the breeding season was the worst in recent years. A variety of causes, primarily extreme winds and flooding, resulted in a hatch rate of 32%. Juvenile predation and possible shortage of prey resulted in an even lower fledging rate.

Forster's Terns (*Sterna forsteri*) began nesting at NBVC in 2006. From an estimated 35 nests in 2006, the colony grew to 320 nests in 2011. However, the 2012 nesting season resulted in very poor hatch rates and fledgling production. While over 100 nests were initiated early in the season, the majority were predated by early June, with some potentially lost

to flooding. Subsequently, most of the adults abandoned the nesting site for the remainder of the season.

**Ruane, Ferrara, and Kelley** also studied a small nesting colony of Brandt's Cormorants around NBVC at Port Hueneme. This is the one of the few mainland colonies in southern California. The cormorants began nesting on site in 2007 when seven nests were documented. The colony is monitored for population and breeding success, and its population has increased in size each year since its inception. Nest building was initiated in February 2012. The first hatch was documented on 7 May 2012; the last juveniles fledged in late August. Documented peaks include 65 nests (20 June 2012), 112 adults (14 June 2012), and 100 juveniles (25 June 2012).

Reproductive monitoring was conducted on the Channel Islands as follows: **Santa Barbara Island**—Scripps's Murrelets (*Synthliboramphus scrippsi*), Cassin's Auklets (*Ptychoramphus aleuticus*), Ashy Storm-Petrels (*Oceanodroma homochroa*), Brown Pelicans (*Pelecanus occidentalis*), Brandt's Cormorants, Pelagic Cormorants, Double-crested Cormorants (*Phalacrocorax auritus*), Pigeon Guillemots, Western Gulls, and Black Oystercatchers; **Santa Cruz Island**—Cassin's Auklets, Black Oystercatchers, Pigeon Guillemots, and Ashy Storm-Petrels; **Anacapa Island**—Brown Pelicans, Brandt's Cormorants, Pelagic Cormorants, Double-crested Cormorants, Scripps's Murrelets, Cassin's Auklets, Ashy Storm-Petrels, Pigeon Guillemots, and Black Oystercatchers; **San Miguel Island**—Cassin's Auklets, Common Murres, and Black Oystercatchers. Personnel are listed below under "Restoration."

### RESTORATION

In the Channel Islands National Park, **L. Harvey** of the California Institute of Environmental Studies (CIES) continued to implement seabird restoration projects under the Montrose Settlements Restoration Program (MSRP) with multiple partners.

Habitat restoration is ongoing at Santa Barbara Island to benefit Scripps's Murrelets and Cassin's Auklets. This project is scheduled to continue for approximately five additional years. Concurrent studies included the effects of Barn Owl (*Tyto alba*) predation on nesting, by **Sarah Thomsen** (Simon Fraser University), and use of nest cameras to investigate breeding biology of Scripps's Murrelets, in collaboration with **Nina Karnovsky** (Pomona College). Reproductive monitoring for these and other species was conducted as in previous years.

The two ongoing MSRP projects on Santa Cruz Island are for the benefit of Cassin's Auklets and Ashy Storm-Petrels. Partners include **David Mazurkiewicz** (National Park Service [NPS]), **Josh Adams** (U.S. Geological Survey), **Frank Gress** (CIES), **Bill McIver** (U.S. Fish and Wildlife Service [USFWS]), **Harry Carter** (Carter Biological Consulting [CBC]), **Karen Flagg** and **Don Hartley** (Growing Solutions). Habitat restoration on Scorpion Rock is ongoing; native plant percent cover to support expanded Cassin's Auklet nesting is approaching target goals, with an expected 3 to 5 years of additional work needed to complete plant community restoration. Social attraction and disturbance reduction efforts for the Ashy Storm-Petrel were continued in the sea caves and offshore rocks of Santa Cruz Island; the nesting colony at Orizaba Rock has responded positively to restoration efforts. Concurrent studies included: (1) investigation of the demographics of the Ashy Storm-Petrel using Passive Integrated Transponder (PIT) tags; (2) audio-visual studies to determine behavior of the Ashy Storm-Petrel at nesting colonies; and (3) evaluation of impacts from predation by Common Ravens (*Corvus corax*).

A feasibility study focused on documenting status of Ashy Storm-Petrels, Scripps's Murrelets, and Cassin's Auklets was conducted at Anacapa Island in 2011-12 with collaborators **D. Mazurkiewicz** (NPS), **Mathew McKown** (University of California, Santa Cruz [UCSC]), **Harry Carter** (CBC), **Frank**

**Gress** and **Mike Parker** (CIES), to determine restoration potential for several species. This study resulted in the first documented Ashy Storm-Petrel nest on the Anacapas, in 2011. Future restoration work is being considered under the Phase 2 MSRP plan.

#### PELAGIC AND BEACH SURVEYS

**Erica Donnelly-Greenan** and **Hannah Nevins** coordinated the Beach-COMBERS program in November, headed by Principal Investigator **Robert McMorrin** (USFWS). Surveys covered Pismo Beach (San Luis Obispo County) south to Leo Carillo State Beach (Los Angeles County).

**Jeff Davis, Phil Capitolo, Dave Lewis, Bill Henry, Peter Gaede, and Glenn Ford** (UCSC; **Breck Tyler**, Principal Investigator) continued to conduct aerial surveys of marine birds and mammals over California continental shelf waters in 2012, under contract with California Department of Fish and Game's Office of Spill Prevention and Response; **Laird Henkel** and **Holly Gellerman**.

**Annette Henry** is working with **Lisa Ballance** and **Robert Pitman** (all of the (National Oceanic and Atmospheric Administration) to analyze seabird data collected in the eastern tropical Pacific and California Current ecosystems.

Coordinator, and **Jojo Genovia**, Executive Assistant, and a growing number of volunteers. The HWC's next milestone will be the start of their public outreach programs. Although the facility is located on Hawai'i Island, it serves all Hawaiian Islands, including the Northwestern Islands up to Midway and Kure Atoll. Since wildlife care began, the HWC has admitted birds from all over the state and recently celebrated its first release in the beginning of October, a young Red-footed Booby (*Sula sula*) from Kaua'i. All birds admitted to HWC thus far have been seabirds, including 2 Red-Footed Boobies, 3 Black-winged Petrels (*Petrorodroma nigripennis*), a Sooty Shearwater (*Puffinus griseus*), 6 Hawaiian Petrels (*Petrorodroma sandwichensis*), and one Band-rumped Storm-Petrel (*Oceanodroma castro*).

**Andre Raine** of the Kaua'i Endangered Seabird Recovery Project (KESRP) continued to work on the conservation of the Newell's Shearwater (*Puffinus newelli*), Hawaiian Petrel, and Band-rumped Storm-Petrel on Kaua'i. Much of the work was through the Kaua'i Island Utility Cooperative's Short-term Habitat Conservation Plan. Standardized auditory surveys were carried out at multiple locations around the island, particularly in Lumahai, Wainiha and Hanalei Valleys and along the Na Pali coast. These surveys confirmed the locations of multiple breeding colonies of all three species. Monitoring efforts were also increased at two sites (Upper Limahuli and Hono o Na Pali Natural Area Reserves), in conjunction with ongoing predator control projects with partner organizations. These monitoring programs focused on individual pairs and nesting burrows to assess survival rates, fledgling rates, predation events and sub-population estimates. They incorporated the use of Reconyx cameras and iButtons at specific burrow locations. In collaboration with **Matthew McKown** of Conservation Metrics Inc., a pilot study was also initiated in Upper Limahuli to investigate whether song meters and wireless acoustic meters could be used to

create population estimates of Newell's Shearwaters and Hawaiian Petrels, as well as identifying new breeding areas within the Preserve.

At the island-wide level, KESRP continued to use radar to assess long-term population changes, with standardized radar surveys being carried out in June at 15 sites around the island. Birds were counted moving from the sea to montane breeding colonies, with counts of targets then compared with previous years. The collision of breeding adults with power lines was the focus of the Underline Monitoring Project, coordinated by KESRP. This study evaluated the levels of incidental take by utility structures on the island through the use of passage-collision rate studies, searcher efficiency, and carcass removal rates; equipment included infra-red cameras, night vision devices, and song meters. The project also considered the impact of these structures on fledglings during the fall-out season. Lastly, with **Trevor Joyce** of Scripps Institution of Oceanography, KESRP has continued to assess at-sea distribution of Newell's Shearwater during the non-breeding season through the deployment of geolocators and the collection of geolocators deployed in the previous season.

**Lindsay Young** (Pacific Rim Conservation) has begun working on a predator-proof fence at Kilauea Point National Wildlife Refuge on Kaua'i, in collaboration with the American Bird Conservancy. She is also starting preparations for translocating Newell's Shearwaters to the site, once it is secure from predators. Along with **Eric VanderWerf**, Young continues monitoring of Laysan Albatrosses (*Phoebastria immutabilis*) and Wedge-tailed Shearwaters (*Puffinus pacificus*) at Ka'ena Point Natural Area Reserve on Oahu, where her first predator-proof fence was completed recently (*Pacific Seabirds* 38 [1-2]:27, 2011). In addition, she is monitoring and working on threat control for Red-tailed tropicbirds (*Phaethon rubricauda*) on Oahu, and surveys for Hawaiian Petrels

## HAWAII

Compiled by **Jennifer Boyce**

#### MAIN HAWAIIAN ISLANDS

The Hawai'i Wildlife Center (HWC) is the only state-of-the-art wildlife rescue, rehabilitation and emergency response facility in the Pacific Islands region that specializes in all species of native birds and bats. They began full wildlife care operations as of 1 September 2012. They now have four staff members: **Linda Elliott**, Center Director, **Judi Ellal**, Wildlife Rehabilitation Manager, **Rae Okawa**, Development

and Newell's Shearwaters on Maui.

#### NORTHWEST HAWAIIAN ISLANDS

**Melinda Conners**, a doctoral student under **Scott Shaffer** at the University of California at Santa Cruz (UCSC), has completed fieldwork for her dissertation at Tern Island, French Frigate Shoals. She has been focusing on the diets and foraging ecology of Laysan and Black-footed (*P. nigripes*) Albatrosses. In November 2011, a new PhD student under Shaffer, **Morgan Gilmour**, took over fieldwork at Tern Island. The breeding season of 2012-2013 marks 11th season of research on the albatrosses at Tern Island; this will provide new insights into unraveling the mechanistic effects between environmental variability and breeding performance. The new work is funded by the Pacific Islands Climate Change Cooperative program of the U.S. Fish and Wildlife Service (USFWS). Additionally, the fifth field season studying Red-footed and Masked (*S. dactylatra*) Boobies at Tern Island will start this year.

**Scott Shaffer** is continuing to study the foraging ecology of Laysan and Black-footed Albatrosses from Midway Atoll, in collaboration with **Maura Naughton** and **John Klavitter** of USFWS. Archival tags are also being recovered and redeployed on albatrosses at Laysan Island by **Corey Clatterbuck**, a Master's student of Shaffer's at San Jose State University, California. Research at all three sites will provide a more complete picture of how three populations of North Pacific albatrosses partition (or don't) the North Pacific Ocean.

State University), **Henri Weimerskirch** (Le Centre national de la recherche scientifique), **Josh Adams** (U.S. Geological Survey) and the Galápagos National Park Service have tracked several species of seabirds in the Galápagos Islands, in both breeding and nonbreeding periods. They are studying the movement, ecology, foraging strategies, and migration patterns of seabirds in the Galápagos Islands. So far, movement data on the following species has been collected: Swallow-tailed Gulls (*Creagrus furcatus*), Galápagos Petrels (*Pterodroma phaeopygia*), Waved Albatrosses (*Phoebastria irrorata*), Red-footed boobies (*Sula sula*), Magnificent Frigatebirds (*Fregata magnificens*), and Great Frigatebirds (*Fregata minor*).

Tracking took place on several islands, including Española, Floreana, San Cristobal, Plazas, and Genovesa. An array of tracking technologies was used depending on the species and reproductive stage. These were Global Positioning System (GPS)-accelerometer (ACC) archival loggers; Argos platform transmitter terminals (PTTs); and global location sensing (GLS) loggers. To their knowledge, it is the first time data have been collected on the detailed movements, both breeding and non-breeding, of Swallow-tailed Gulls and Galápagos Petrels. This is especially important because the Galápagos Petrel is Critically Endangered (IUCN). This information is not only useful for management and conservation purposes but also it addresses key questions in seabird ecology in general. Writing and publishing the results have begun. All tracking data are available through the online animal movement database [www.movebank.org](http://www.movebank.org); collaborators and researchers interested in these data are welcome to use them. Contact **Godfrey Merlen** ([merlenway@gmail.com](mailto:merlenway@gmail.com)) or **Sebastian Cruz** ([cruz.seb@gmail.com](mailto:cruz.seb@gmail.com)).

Since September and October of 2010, **Dee Boersma** and **Godfrey Merlen** (both at the University of Washington, Seattle), and helpers including **Burr Heneman**, have created new nest opportunities for Galápagos Penguins (*Spheniscus mendiculus*) on the west

side of Isabela Island and on westernmost Fernandina Island. The researchers used natural materials—lava. They are visiting the constructed nests twice a year and web-tagging the penguins. The idea is to observe if penguins are site-faithful, or if they will start nesting in new areas, since erosion has destroyed many of their original nest sites at the main breeding location in Elizabeth Bay. This study is in cooperation with the Galápagos National Park. It has its roots in the poor recovery of Galápagos Penguins from El Niño events, which have depressed the population of this endemic bird. Some nests are already in use—some birds use the newly created nest sites as refuges for molting, and several have laid eggs and produced chicks in them. In 2010 some chicks fledged, but since then the production of fledglings has been poor and little effort has been made to breed. They hope to test their hypothesis that there is a lack of good nest sites, even when conditions are good otherwise.

Low penguin weights appear to be related to highly fluctuating surface temperatures in the ocean and very variable marine productivity. It has been noted that there appear to be fewer "feeding frenzies" than 20 years ago, and that multispecies feeding areas are attractive to penguins. Hundreds of penguins may be found amongst pelicans (Pelecanidae), Blue-footed Boobies (*Sula nebouxii*), noddy terns (e.g. Brown Noddy *Anous stolidus*), sharks, tuna, and especially sierra mackerel (*Scomberomorus sierra*).

Work is being done with the Galápagos National Park to create penguin conservation zones, in particular areas of higher population levels. **Antje Steinfurth**, University of Cape Town, has deployed GPS devices on several individuals. These data support our observations of penguin routes and concentrated feeding areas.

The National Audubon Society's Seabird Restoration Program began a colony restoration project in Baja California, in collaboration with Mexico's Grupo de Ecología y Conservación de Islas (GECI) and Cornell Lab of Ornithology. The project is focusing on

#### LATIN AMERICA

Compiled by Jennifer Boyce

Since 2007, **Sebastian M. Cruz** (PhD Student, Max Planck Institute for Ornithology, Germany) in collaboration with **Dave Anderson** (Wake Forest University), **Kate Huyvaert** (Colorado

California Brown Pelicans (*Pelecanus occidentalis*), Cassin's Auklets (*Ptychoramphus aleuticus*), Ashy Storm-Petrels (*Oceanodroma homochroa*), and Guadalupe Murrelets (*Synthliboramphus hypoleucus*).

**Felipe A. Estela** (Colombia) is a PhD candidate at Wake Forest University in Winston Salem, North Carolina. His research is on the effects of the foraging behavior, genetics, and ecology of Nazca Boobies (*Sula granti*). Estela's full report appears under "Corresponding Member Reports" in this issue.

which has been in effect for more than 20 years, appeared to be successful this summer with the control of avian predators. Predators are mainly Jungle crows, *Corvus macrorhynchos*, and perhaps also the Carrion Crow, *C. corone*, as well as Slaty-backed Gulls, *Larus schistisagus*. About 10 fledglings jumped i.e., "fledged" off the cliff.

The Japanese Murrelet Status Research group (**M. Takeishi**, **K. Otsuki**, **Y. Nakamura**), with **H. Carter** and **D. Whitworth**, surveyed islets in western Japan and found that rats inflict serious damage on seabirds at some islets. They also did a spotlight survey at an islet in southern Korea, collaborating with Korean seabird researchers at the Migratory Birds Research Centre, and on Birojima southern Japan. The results were presented at the International Symposium on Migratory Birds: Status and Conservation Efforts on Murrelets, which was held at Mokpo, Korea, on 24 August 2012. The conference was hosted by the National Park Research Institute and Shinan County.

The Japan Seabird Group and Pacific Seabird Group personally handed a letter on 21 March 2012 to the representative of the Ministry of Environment (**M. Kobayashi**) recommending conservation of Japanese Murrelets, *Synthliboramphus wumizusume*, and their habitat around Nagashima in the Seto-inland Sea, where a nuclear power plant has been planned to be constructed. The Japan Seabird Group and the Ministry of Environment are also working on seabird colony database within Japan; it will be available in 6 months (but in Japanese only, at this moment).

the National Oceanic and Atmospheric Administration (NOAA), is engaged in several projects aimed at predictive modeling of long-term patterns of marine bird occurrence and abundance in the western Atlantic. The work will facilitate marine spatial planning, and in particular to support planning for offshore renewable energy facilities. These projects are being funded by NCCOS, the Bureau of Ocean Energy Management (BOEM), and the U.S. Geological Survey (USGS), and conducted in partnership with the U.S. Geological Survey's (USGS) Patuxent Wildlife Research Center (PWRC).

In the first project, completed in March 2012, spatially explicit predictive models of marine bird occurrence and abundance were developed for the New York Bight and are being used to help formulate New York's Offshore Spatial Plan (NOAA *Technical Memorandum* NOS NCCOS 141, Chapter 6, available here: [http://ccma.nos.noaa.gov/ecosystems/coastalocean/ny\\_spatialplanning.aspx#products](http://ccma.nos.noaa.gov/ecosystems/coastalocean/ny_spatialplanning.aspx#products)). This project was led by **Brian Kinlan** (NOAA) with co-authors **Charles Menza** (NOAA) and **Falk Huettmann** (University of Alaska, Fairbanks).

The second project, which is ongoing, concerns statistical guidelines for the sampling effort that will provide statistical power needed to detect species-specific hotspots and cold spots of occurrence and abundance from at-sea survey data ([http://www.boem.gov/uploadedFiles/BOEM/Environmental\\_Stewardship/Environmental\\_Studies/Renewable\\_Energy/OREP\\_AvianSampling\\_profile\\_2012.pdf](http://www.boem.gov/uploadedFiles/BOEM/Environmental_Stewardship/Environmental_Studies/Renewable_Energy/OREP_AvianSampling_profile_2012.pdf)). This project is led by **Brian Kinlan** (NOAA) and **Chris Caldow** (NOAA), with collaborators **Allan O'Connell**, **Elise Zipkin**, **Allison Sussman**, and **Mark Wimer** (PWRC).

The third project is producing improved predictive spatial models of marine bird occurrence and abundance in the U.S. mid-Atlantic (Cape Hatteras to Cape Cod), using over 30 quantitative at-sea surveys from USGS's Compendium of Avian Occurrence database, combined with many high-resolution oceanographic and environmental predictors. This project is led by **Brian**

## EASTERN ASIA

Compiled by **Yutaka Watanuki**

**Yukiko Inoue**, **Sayaka Nakatsuka**, **Daisuke Ochi**, **Hiroshi Minami**, and **Nobuhiro Katsumata** (Fisheries Research Institute) are now developing effective seabird bycatch mitigation gear on tuna longline fisheries and collecting data about distribution and foraging ecology of by-caught seabirds, mainly albatrosses and petrels.

At Teuri island, off the western coast of Hokkaidō, Japan in the Sea of Japan, **Yutaka Watanuki** and his students (**Yuya Suzuki**, **Kenji Hoshina**) continued diet and breeding monitoring of Black-tailed Gulls, *Larus crassirostris*, Japanese Cormorants, *Phalacrocorax capillatus*, and Rhinoceros Auklets, *Cerorhinca monocerata*. They analyzed eggs and blood of Rhinoceros Auklet via stable isotope analyses to discern diet during egg-laying. They also used GPS tagging to find their foraging range during chick rearing. Breeding success of Black-tailed Gulls has been very low during several years. Disturbance by cats is believed to be one of reasons of this poor success and the population decline. The City of Haboro, Ministry of Environment and Veterinarian Society of Hokkaido started a management program of cats at Teuri this year. The Common Murre (*Uria aalge*) restoration program by the Ministry of Environment,

## NON-PACIFIC UNITED STATES

Compiled by **Iain Stenhouse**

### PELAGIC SURVEYS AND MODELLING

The National Centers for Coastal Ocean Science (NCCOS), a division of the National Ocean Service (NOS) of

## REGIONAL REPORTS • Non -Pacific United States

**Kinlan** (NOAA), with **Robert Rankin** (NOAA), **Allan O'Connell** (USGS), **Mark Wimer** (USGS), and **Allison Sussman** (USGS). They plan to expand the models to the entire U.S. Atlantic as data and resources allow. Finally, **Brian Kinlan** (NOAA) is working with **Beth Gardner** (North Carolina State University) and **Andrew Gilbert** (Biodiversity Research Institute) on a North Atlantic Landscape Conservation Cooperative project, which will develop techniques for spatially explicit risk assessment for marine birds in the Mid-Atlantic. This project is coordinated by the U.S. Fish and Wildlife Service (USFWS).

NOAA participated in a two-day workshop entitled “Mid-Atlantic Marine Wildlife Surveys, Modeling, and Data: Workshop to Establish Coordination and Communication,” at its headquarters in Silver Spring, Maryland in July 2012. The workshop was organized by the New West Technologies/Wind and Water Power Program in the Department of Energy (DOE). For additional information on these projects contact Brian Kinlan (brian.kinlan@noaa.gov).

The Biodiversity Research Institute (BRI) is carrying out broad-scale baseline surveys for marine birds, marine mammals, and sea turtles in the mid-Atlantic region, using a combination of boat-based and aerial surveys. The latter work employs high-definition videography; this is proving to be an extremely effective method, capturing distribution and abundance information on a broad range of marine taxa from a single survey platform. Among others, **Iain Stenhouse** (BRI) and **Richard Veit** (City University of New York, CUNY) are co-principal investigators on the broader project. Funding is by DOE.

**Jeff Davis, Phil Capitolo, Dave Lewis, Bill Henry, Peter Gaede, and Glenn Ford** (University of California, Santa Cruz; **Breck Tyler**, Principal Investigator), with **Mike Parker** (California Institute of Environmental Studies), continued to provide aerial survey support to USFWS for studies related to the *Deepwater Horizon* oil spill in the Gulf of Mexico.

### COLONY-BASED STUDIES

**Steve Kress** and **Paula Shannon** of the National Audubon Society's Seabird Restoration Program (SRP) continued long-term monitoring of breeding seabird populations in the Gulf of Maine. They focused on diet studies, productivity, growth, and populations of terns (*Sterna* spp.), Atlantic Puffins (*Fratercula arctica*), Razorbills (*Alca torda*), and Black Guillemots (*Cephus grylle*). In partnership with explore.org, SRP deployed four high-definition cameras streaming live video of nesting puffins, terns, and Osprey (*Pandion haliaetus*) to the internet. SRP also began a seabird colony restoration project in Baja California, in collaboration with Mexico's Grupo de Ecología y Conservación de Islas, and the Cornell Lab of Ornithology. For more information, see the Latin America report.

Audubon's internship training program continued, with interns from 25 states and five countries, including Belize, Fiji, Germany, and Denmark.

Under the guidance of **Patrick Jodice** (USGS, South Carolina Fish and Wildlife Cooperative Research Unit [SC-CRU], and Clemson University [CU]), research continued on seabird colonies and shorebirds in South Carolina, the Gulf of Mexico, and the Caribbean. **Elizabeth Zinsser** (MS candidate at CU) assessed reproductive success and nesting habitat selection of Wilson's Plovers (*Charadrius wilsonia*) in South Carolina. **Caroline Poli** (MS candidate at CU) initiated research on attendance patterns and reproductive ecology of Bahamian seabirds. **Juliet Lamb** (PhD student) is initiating research on spatial ecology and movement patterns of Brown Pelicans (*Pelecanus occidentalis*) in the Gulf of Mexico. Along with **Will Mackin** and The Nature Conservancy in Jamaica, **Jodice** is continuing and expanding tracking work of pelagic seabirds in the Bahamas and Caribbean including Audubon's Shearwater (*Puffinus lherminieri*), White-tailed Tropicbird (*Phaethon lepturus*) and Masked Booby (*Sula dactylatra*). **Jodice** is also working with **Chris Haney** (Defenders of Wildlife) and **Ann Sutton** and **Lisa Sorenson**

(Society for the Conservation and Study of Caribbean Birds) on a grant designed to enhance capacity of seabird science in the Caribbean; this work is funded by National Fish and Wildlife Foundation. Three training workshops have been conducted to date.

**Linda Welch** at the Coastal Islands National Wildlife Refuge (MCINWR) leads a pilot project using nanotags (coded radio tags) to document colony attendance rates and foraging behavior of Common Terns (*Sterna hirundo*), Arctic Terns (*S. paradisaea*), and Black Guillemots. They used automated receiving stations on the seabird breeding colony and 2 nearby islands to try and document the location of foraging habitat. The receiving stations collected data 24 hours a day and collected over 1.3 million records. They were able to calculate average time away from the colonies (i.e. potential foraging trips) and noted that trips completed by Arctic Terns were 70% longer than those of Common Terns. Based on average flight speeds, it is possible that Arctic Terns could be traveling 80 km per trip, while Common Terns may travel 48 km per trip.

### TRACKING STUDIES

Working with the International Black-capped Petrel Conservation Group, **Jim Goetz, Jessica Norris Hardesty, and Jennifer Wheeler** produced a Black-capped Petrel (*Pterodroma hasitata*) Conservation Action Plan in January 2012. This plan provides a framework for the ongoing field investigations of this species in Hispaniola, its only confirmed nesting location, led by **Ernst Rupp** and **Esteban Garrido** (both with the Dominican non-governmental organization). This work is integrating the use of a portable radar system under the supervision of **Adam Brown** (Environmental Protection in the Caribbean) and **Peter Sanzenbacher** (ABR-Environmental Research and Services). In August 2012, **George Wallace** (American Bird Conservancy), **Pat Jodice** (SCCRU), **Lisa Eggert**, and **Dustin Meatty** (Biodiversity Research Institute) undertook the first excursion

to scope out the possibility of capturing Black-capped Petrels at sea in order to track them.

**Linda Welch** (MCINWR) and **Steve Kress** (SPR) recaptured 11 Arctic Terns that had been equipped with geolocators in 2010. The birds were tagged on two breeding colonies in Maine, and were recaptured at the same colonies in 2011. They recovered two additional units in 2012 that each contained two complete years of data. Tagged birds traveled an average of 59,400 km in one year. **Steve Kress** also oversees a study of Atlantic Puffin movements in the non-breeding season. The study continued in 2012 with the retrieval of 11 geolocators and the deployment of six additional units. Atlantic Puffin geolocator data are in the process of being downloaded and analyzed. **Linda Welch** has also deployed 20 satellite transmitters (7 in 2010, 4 in 2011, and 9 in 2012) on Greater Shearwaters (*Puffinus gravis*). The birds were tagged off the coast of Maine in August. The units are programmed to transmit for 6 hr each day (then 18 hr off); they have lasted an average of 112 days, with a maximum transmission length of 180 days. The maximum distance traveled was 44,456 km.

**Iain Stenhouse**, **Lucas Savoy**, and **Carrie Gray** from BRI, **Bill Montevecchi** from Memorial University of Newfoundland, and **Alicia Berlin** and **Ron Therrien** from USGS are collaborating on a satellite telemetry study of diving bird species wintering in the mid-Atlantic region. This study tracks the movements of three focal marine bird species — Northern Gannets (*Morus bassanus*), Red-throated Loons (*Gavia stellata*), and Surf Scoters (*Melanitta perspicillata*). Birds are caught at sea in winter, specifically to examine (1) their winter use of the mid-Atlantic continental shelf area, and (2) their migratory movements in relation to the federally-designated Wind Energy Areas (WEAs) off of Delaware, Maryland, and Virginia. The study was funded by BOEM and coordinated by USFWS (**Scott Johnson** and **Caleb Spiegel**).

**Felipe A. Estela** (Colombia) is a PhD candidate at Wake Forest University in Winston Salem, North Carolina, using tracking to determine the effects of the foraging behavior of Nazca Boobies (*Sula granti*), including evolutionary and ecological aspects, and on the genetic structure of the species and connectivity among populations. For more information, see the Corresponding Member's Report by Estela in this issue.

Since 2007, **Sebastian M. Cruz** (PhD. Student, Max Planck Institute for Ornithology, Germany) in collaboration with **Dave Anderson** (Wake Forest University), **Kate Huyvaert** (Colorado State University), **Henri Weimerskirch** (Le Centre national de la recherche scientifique, France), **Josh Adams** (USGS, California), and the Galápagos National Park Service have tracked several species of seabirds in the Galápagos Islands, both during breeding and non-breeding periods. For more information please refer to the Latin America Regional Report.

#### OTHER STUDIES

**Jeff Spendelow** (USGS) coordinates PWRC's long-term cooperative research project on the ecology of the endangered northwest Atlantic population of Roseate Terns (*Sterna dougallii*). With cooperators, including **Jen Rock** of the Canadian Wildlife Service, and Massachusetts Audubon's Coastal Waterbird Program (MACWP), Jeff expanded his dispersal studies on the use of staging sites in southeastern Massachusetts. Hatch-year (HY) Roseate Terns had been given field-readable 3-character plastic bands in Nova Scotia, Maine, New Hampshire, and Connecticut. The researchers continued long-term studies of survival by color-banding 323 chicks at 7 sites and 16 adults in Nova Scotia. Jeff and cooperators resighted 242 (75%) of the HYs and 15 (94%) of the adults that had been color-banded in 2012, for a considerably higher resighting rate of HYs than in 2011 (59%). Also, two Roseate Terns given field-readable bands as chicks in 2011 were seen in 2012 in the Provincetown section of the Cape Cod

National Seashore (CCNS). During a 5-hour period on 8 September 2012 in the Hatches Harbor area at the western end of the CCNS, Jeff and Jen resighted 69 HYs and 6 adults, representing more than 22% of the terns that received field-readable bands in 2012. The research program also received assistance and/or logistic support from MACWP staff (**Ellen Jedrey**, **Cris Luttazi**, **Kathy Parsons**, **Kate Strang**), Cape Cod National Seashore (**Mary Hake**, **Karli Rogers**, **Nuray Taygan**), the USFWS, and cooperators on Nantucket Island (**Edie Ray**, **Jonathan Shuster**).

**Robin Overstreet** of the University of Southern Mississippi, along with graduate students **Eric Pulis** and **Michael Andres**, in addition to **Vasyl Tkach** of the University of North Dakota, are in the process of conducting numerous taxonomic and ecological studies of bird helminths. Studies concern ascaridoid nematodes, blood flukes, intestinal flukes and tapeworms. Some research concerns infections in birds from (1) Mississippi and North Dakota, (2) Africa and other international locations, and (3) the Summer Lake Wildlife Area, Oregon, with cooperation of **Marty St. Louis** (Oregon Department of Fish and Wildlife). Manuscripts are in progress on analysis of molecular and morphological data.

**Samantha Richman** has been working as a Postdoctoral Fellow with **Scott McWilliams** at the University of Rhode Island (URI) examining the nutritional requirements, growth, survival, and digestive physiology of arctic geese. In addition, she continues her work with captive sea ducks at the Livingston Ripley Waterfowl Conservancy in Connecticut.

**Julie Ellis** with the Seabird Ecological Assessment Network (SEANET) continues to collaborate with the National Parks Service (NPS), U.S. Department of Agriculture (USDA), and USFWS on investigations into the recently described Wellfleet Bay Virus (WFBV) in Common Eider (*Somateria mollissima*) on Cape Cod. **Randy Mickley** of USDA obtained

additional blood and tissue samples from several stranded birds this month and shipped them to **Justin Brown** and the research team at the Southeast Cooperative Wildlife Disease Study (SCWDS). The SCWDS team continues to refine our understanding of this virus, its potential source, and its route of communication. The cooperation of **Robert Cook** at NPS and **Mark Faherty** at Massachusetts Audubon has been critical in the timely acquisition of samples. **Chris Dwyer** and **Samantha Gibbs** of USFWS obtained essential funding for this work.

**Sarah Courchesne** continues work on SEANET's Field Guide to Beached Birds of the Southeastern United States. Anticipated publication is October 2013. While the guide is progressing well, Sarah continues to seek photos of several elusive species that are particularly rare finds on the beach—Magnificent Frigatebird (*Fregata magnificens*), White-tailed Tropicbird, Black Skimmer (*Rhynchos niger*), several tern species, and a few others. If you have a private trove of dead bird photos, or know of a colleague who might have any, please get in touch with

land (Wales), Lundy Island (England), Lighthouse Island (Copelands, Northern Ireland), Rhum Island (Scotland) and razorbills at Skomer Island (Dean et al., *J. Roy. Soc. Interface*, 3 October 2012). An extremely cold and wet summer caused problems for both researchers and seabirds, as even older shearwater chicks drowned in their burrows and many razorbill chicks were abandoned. Regular ongoing monitoring (breeding success, phenology, chick-growth rates in shearwaters) was supplemented with feather sampling.

**Tim Guilford** (University of Oxford, Oxford, UK), continued research with **Rhiannon Meier** (PhD candidate, University of Southampton, Southampton, UK), **Russ Wynn** (University of Southampton, Southampton, UK), and field organizers **Miguel McMinn** and **Anna Rodriguez**, on the at-sea and migratory behavior of the critically endangered Balearic shearwater (*Puffinus mauretanicus*), on Mallorca and Menorca (Guilford et al., *PLOS ONE* 7(3): e33753, 2012).

**Ellie Owen**, Royal Society for the Protection of Birds (RSPB) and project research staff of Future of the Atlantic Marine Environment (FAME) completed a third year of multispecies, multisite and multi-tag-type tracking from UK seabird colonies (11 colonies in Scotland, 3 in England, 3 in Wales and 1 in Northern Ireland). Over 844 GPS tags have now been retrieved, along with 131 TDR dive loggers (dual deployed with GPS tags) and 43 GLS tags from five species: Black-legged Kittiwake Northern Fulmar *Fulmarus glacialis*, Common Murre *Uria aalge*, Razorbill, and European Shag *Phalacrocorax aristotelis*. These data are being used to run habitat association models to identify and predict foraging densities of UK seabirds during the breeding season to inform marine spatial planning, in particular marine protected areas and offshore renewable energy development. Maps are available for download by visiting [www.rspb.org.uk/fame](http://www.rspb.org.uk/fame).

**Steffen Ossel**, Royal Society for

the Protection of Birds, in collaboration with **Matthew McKown** and **Abraham Borker**, University of California Santa Cruz, deployed 17 automated sound recording devices on several islands in the Azores to record Cory's (*Calonectris diomedea*), Manx (*Puffinus puffinus*), and Macaronesian (*P. baroli*) Shearwaters. The work is part of a project funded by the European Commission's LIFE program to assess the feasibility of eradicating rats and cats from Corvo to restore the seabird community on this island.

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## OCEANIA AND SOUTH ATLANTIC OCEAN

Compiled by **Steffen Ossel**

### SOUTH ATLANTIC

**Steffen Ossel**, Royal Society for the Protection of Birds, in collaboration with the St Helena Government conducted some pilot work to track Masked Boobies (*Sula dactylatra*) and Red-billed Tropicbirds (*Phaeton aethereus*) with GPS loggers from breeding colonies on the UK Overseas Territory of St Helena. Funding will be sought to expand seabird tracking in 2013, in combination with a project on neighboring Ascension Island, to identify potential marine protected areas.

The Ascension Island Government, in collaboration with the Universities of Exeter (UK), Lund (Sweden), the Army Ornithological Society, and the Royal Society for the Protection of Birds (**Steffen Ossel**, **Richard Cuthbert**, and **Mark Bolton**) have started a tracking project funded by the UK Darwin Initiative to assess the importance of marine areas around Ascension for seabirds and turtles. Over the next 3 years this project will accumulate tracking data for Sooty Terns (*Onychoprion fuscatus*), Masked Boobies (*Sula dactylatra*), and Ascension Frigatebirds (*Fregata aquila*) to identify offshore foraging areas.

**Ed Melvin** and **Troy Guy**, Washington Sea Grant (WSG), are in the final

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## EUROPE AND AFRICA

Compiled by **Steffen Ossel**

### NORTH ATLANTIC AND MEDITERRANEAN

The Oxnad group (Animal Behaviour Research Group, University of Oxford), consisting of **Akiko Shoji** and **Annette Fayett** (PhD candidates, University of Oxford, Oxford, UK), research assistant **Philip Collins**, field advisor **Chris Perrins**, and project leader **Tim Guilford** (University of Oxford) studied Manx Shearwaters (*Puffinus puffinus*), Atlantic Puffins (*Fratercula arctica*), Razorbills (*Alca torda*), Common Guillemots (*Uria aalge*) and Black-Legged Kittiwakes (*Rissa tridactyla*). They retrieved/replaced GLS (geolocator) tags to study migration and wintering areas, and deployed GPS loggers and time-depth recorders (TDRs) to examine foraging behavior of shearwaters at Skomer Is-

## REGIONAL REPORTS • Oceania

stages of publishing the results of their research, funded by the Packard Foundation and WSG, trialing seabird bycatch mitigation measures in the South African joint venture tuna longline fishery in 2009 and 2010. In 2011, the Agreement on the Conservation of Albatrosses and Petrels (ACAP) adopted the recommendations stemming from this research as best practice for pelagic longline fisheries. Subsequently, two of five tuna commissions revised their seabird conservation measures to require vessels to use of two of three best-practice seabird bycatch measures recommended by ACAP in their southern hemisphere pelagic longline fisheries. The tuna commissions are the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Indian Ocean Tuna Commission (IOTC). In August 2012, the Scientific Committee of the Western Central Pacific Fisheries Commission recommended that the Commission revise its seabird conservation measures for southern hemisphere pelagic longline fisheries to be consistent with those of ICCAT and IOTC.

### OCEANIA SOUTH PACIFIC

**Antje Steinfurth** (University of Cape Town) has deployed GPS devices on several Galapagos Penguins (*Spheniscus mendiculus*). These data support visual observations of penguin routes and concentrated feeding areas. For more information, please refer to the Latin America Regional Report.

Since 2007, **Sebastian M. Cruz** (PhD Student, Max Planck Institute for Ornithology, Germany), in collaboration with **Dave Anderson** (Wake Forest University), **Kate Huyvaert** (Colorado State University), **Henri Weimerskirch** (Le Centre National de la Recherche Scientifique), **Josh Adams** (U.S. Geological Survey) and the Galapagos National Park Service have tracked several species of seabirds in the Galápagos Islands, during both breeding and non-breeding periods. For more detail, please refer to the Latin America Regional Report.

**Caitin Kroeger and Scott Shaf-**

**fer** of the University of California at Santa Cruz are collaborating with **David Thompson** and **Paul Sagar** of the National Institute of Water and Atmospheric Research in New Zealand. Kroeger is studying the foraging ecology and energetics of two albatross species at Campbell Island, New Zealand, for her masters degree.

**Jez Bird**, BirdLife International, and the Te Ipukarea Society have completed a feasibility study for the eradication of invasive mammals from Suwarrow Atoll, the Cook Islands' most important seabird site. The eradication will be attempted in 2013.

**Jez Bird** and the National Trust of Fiji used an aerial and ground-based operation to remove invasive rats and goats on the Fijian islands of Monuriki (home to Tom Hanks during the filming of "Castaway"), Matamanoa and Kadomo in December 2011. All three islands support breeding Wedge-tailed Shearwater (*Puffinus pacificus*) colonies. A rapid pre-eradication survey of Monuriki (at 39 ha the largest of the three islands) estimated a population of 2000–5500 breeding pairs. While this colony is small in regional terms, it is the largest known population in Fiji. The first followup visit to resurvey Wedge-tailed Shearwaters has been completed and results will be published shortly. There was no sign of any invasive mammals present on the island. Further followup surveys will be completed to assess population changes of shearwaters and the Critically Endangered Fiji Crested Iguana (*Brachylophus vitiensis*).

The Collared Petrel (*Pterodroma brevipes*) was uplisted on the 2011 IUCN Red List to Vulnerable. **Jez Bird** and **Mareqeti Viti** of NatureFiji undertook surveys prompted by this decision. The work was funded in part by a small grant from the by the Pacific Seabird Group's Craig S. Harrison Conservation Fund. These surveys recorded Collared Petrels at five sites in Fiji, confirming their presence either for the first time or after a lengthy gap in records. Nocturnal spotlighting surveys were successful on Koro, in the Lomaiviti group, the three

islands of the Yasayasa Moala group, Moala, Totoya and Matuku, and in the Nabukelevu/Mt Washington Important Bird Area on Kadavu. Following these surveys, BirdLife has begun a project funded by the Critical Ecosystem Partnership Fund (CEPF) spotlighting and banding Collared Petrels with local members of the Nabukelevu Site Support Group, west Kadavu. This project has installed artificial nest boxes and a remote playback device to attempt to attract petrels to known burrows where predator control can be introduced and the population can be studied and monitored. It is hoped that the preliminary stage of mark and release of wild birds may yield some population estimates in the future based upon recaptures of banded birds. Monthly visits to Nabukelevu in Mar-July 2012 have recorded encounter rates with Collared Petrels an order of magnitude lower than on Gau.

**Mareqeti Viti** continued work on Collared Petrel and the Critically Endangered Fiji Petrel (*Pseudobulweria macgillivrayi*) on Gau, Fiji. They have detected Tahiti Petrel (*P. rostrata*) at the summit of Nabukelevu for the first time. In October and November 2011 two separate Fiji Petrels were grounded in villages on Gau. Both birds were banded and safely released. The NatureFiji team has been using trained dogs to search for burrows. 2012 has been the most successful season to date with the dogs locating at least 25 nesting burrows, having previously only detected two. Remote playback is also being used on a summit on Gau using calls of other *Pseudobulweria* petrels to try to attract Fiji Petrel to an area where artificial nest boxes have been installed. At-sea surveys recorded Fiji Petrel in 2008 and 2009 but have not been performed since.

To feed into a regional program identifying marine Important Bird Areas, **Jez Bird** has been opportunistically recording seabirds from private vessels and passenger ferries. Most tropical Pacific petrels have not yet been studied with tracking devices; systematically recording individuals at sea therefore offers important insights into populations and

distributions. A chumming trip southwest of Gau in February 2012 failed to record Fiji Petrel but encountered several White-necked Petrels (*Pterodroma cervicalis*), with small numbers of Black-winged (*Pterodroma nigripennis*), Collared, and Tahiti Petrel. There have been two at-sea sightings in Fiji of Fiji Petrel since the 2009 dedicated survey. The sightings were from the passenger ferry approaching Gau on 4 May 2011 at 179.9807° E, 19.0032° S, and on 25 June 2012 at 179.0533° E, 18.0402° S.

Remote playback has been installed on the island of Vatu-i-ra, Fiji. This island was the subject of a rodent eradication in 2006. It supports internationally significant seabird colonies with ca. 30,000 pairs of Black Noddy (*Anous minutus*) as well as Red-footed (*Sula sula*) and Brown Boobies (*S. leucogaster*), Lesser Frigatebird (*Fregata ariel*), Great Crested Tern (*Sterna bergii*) and an apparently increasing Bridled Tern (*Sterna anaethetus*) population. Playback, with placement of artificial nest boxes, is aimed at attracting threatened Polynesian Storm-Petrel (*Nesofregetta fuliginosa*), Collared Petrel and Tahiti Petrel.

Elsewhere in the south Pacific, the Bismarck Archipelago in northeast Papua New Guinea has begun to yield additional seabird discoveries. In 2004 and 2007, Hadoram Shirihai's surveys identified Heinroth's Shearwater (*Puffinus heinrothi*) and Beck's Petrel (*Pseudobulweria becki*). Regular transits by an

annual tourist cruise (a "Western Pacific Odyssey") have continued to sight these species, but no active nest burrows have yet been found for either species, and their population trends and conservation status remains unclear. Detecting breeding colonies is regarded as a prerequisite to undertaking target conservation and research. **Ailan Awareness** and **Jez Bird** completed a survey in March 2012 that recorded the single greatest aggregation of Beck's Petrels: a flock of 100+ individuals. The flock was within ca. 1 km of land at the base of Mt Agil, New Ireland's tallest mountain. This is now firmly regarded as the most likely site to support this species' breeding grounds. The survey also recorded breeding seabird populations around the southern tip of New Ireland.

On Savii, the largest of Samoa's two main islands, during a CEPF-funded Rapid Assessment Program survey, **Jez Bird** recorded Tahiti Petrel (*Pseudobulweria rostrata*) for the first time in the upland interior of the island. Samoa is not recognised for supporting internationally important seabird populations, but Tau, American Samoa, holds the largest known Tahiti Petrel colony.

The New Zealand territory of Tokelau is comprised of three atolls: Atafu, Nukunonu and Fakaofu. They have held breeding populations of seabirds. As the territory is geographically isolated, Samoa is the only port of entry to Tokela'u and it takes three days on

a ferry to reach the furthest atoll. A survey was undertaken by **Mere Valu** of BirdLife International and **Ray Pierce** of EcoOceania Pty Ltd (Australia). The work included a feasibility study to determine restoration opportunities and to provide recommendations to improve current biosecurity and surveillance in the Tokelau Islands. Breeding seabird species included Red-tailed Tropicbird (*Phaeton rubricauda*), Sooty Tern (*Onychoprion fuscatus*), Red-footed Booby (*Sula sula*), White Terns (*Gygis alba*), Black Noddy (*Anous minutus*) and Brown Noddy (*Anous stolidus*). None of the species were sufficiently abundant to trigger Important Bird Area criteria, but the atolls represent a potentially important geographic stepping stone for Pacific populations.

The rat eradication on Henderson Island in August 2011 was unsuccessful. The Pitcairn Islands Government and the RSPB undertook a trip to Henderson in May 2012 to assess the outcome of the rat eradication campaign, after a National Geographic expedition had reported the presence of rats in March 2012. Unfortunately, breeding rats were found on the island. Tissue samples were taken from rats to establish whether they survived the aerial poison bait drop, or whether they have re-invaded Henderson Island after the eradication. An external review of the eradication planning and execution is in progress to determine the causes for the possible eradication failure, and the results of this review will be published to inform future eradication campaigns.

# INFORMATION FOR CONTRIBUTORS

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Pacific Seabirds is a journal of the Pacific Seabird Group (PSG). The journal appears twice a year, in spring and fall (autumn). Manuscripts and news items are welcome on any topic relating to Pacific seabirds or to their conservation. Short manuscripts are preferred (about 1000 to 5000 words for major submissions). Submit materials to the Editor (except as noted below): Dr. V.M. Mendenhall, 4600 Rabbit Creek Road, Anchorage, Alaska 99516; e-mail fasgadair@attalascom.net. Deadlines are normally 20 March for the spring issue and 20 September for the fall issue.

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## EDITORIAL POLICY

*Pacific Seabirds* welcomes contributions on work and issues relevant to seabirds anywhere in the Pacific region. *Pacific Seabirds* reflects the policies of PSG's Executive Council. On issues for which such a policy has not been expressed, the journal aims for an unbiased presentation of all points of view. The editor welcomes letters and other feedback.

## CONTRIBUTIONS

Contributors are invited to submit the following:

- **Articles** on original research (to be peer-reviewed)
- **Reports** on current topics (e.g., research in progress or seabird conservation issues; not peer-reviewed)
- **Forum** articles are columns on a current topic, either in research and conservation, or other issues within or outside PSG. If a topic may be controversial, the editor reserves the right to invite comment or an accompanying article that may present another viewpoint.
- **Review articles** (these may cover seabirds worldwide)
- **Conservation News** (*submit to* Jo Smith, Associate Editor for Conservation; *josmith@birdsmith.ca*)
- **News items** (short news relating to seabird research, conservation, or the Pacific Seabird Group)
- **Book reviews**
- **Letters** commenting on content of *Pacific Seabirds* or other issues
- **Art work**, such as sketches or photos of seabirds, either accompanying a text or for publication alone

## SUBMISSION OF MANUSCRIPTS

Material may be submitted by e-mail or regular mail (addresses above). Materials sent by e-mail should be attached to the main message and should be in Word or Rich Text Format, except that materials less than 300 words long may be sent in the body of the e-mail. For manuscripts submitted by e-mail, figures must also be sent as separate files or via regular mail. If a manuscript is submitted by regular mail, include a CD. The language of *Pacific Seabirds* is English; an abstract or summary may be duplicated in a second language, if desired.

## PEER-REVIEW OF MANUSCRIPTS

Articles and review articles will be submitted to two peer reviewers for technical review. Authors are invited to suggest reviewers. Other submissions may also be sent for review, if (a) the author requests this, or (b) at the editor's discretion.

## FORMAT OF MANUSCRIPTS

Contributors should follow these guidelines. For other details, consult the format in a recent issue of *Pacific Seabirds*. Back issues are online at [www.pacificseabirds.org](http://www.pacificseabirds.org)

## GENERAL FORMAT

Manuscripts should be double-spaced with 1-inch margins. If your paper size is A4 (European), **the bottom margin must be at least 1½ inch** (including in electronic files), to ensure that it will print properly on US equipment. Pages should be numbered, except for Tables and Figures.

Give the scientific name (*italicized*) after the first mention of any genus or species. English names of bird species are capitalized (e.g., Fork-tailed Storm-Petrel). Names of mammals, other taxa, and English names of bird groups are lowercase, except for proper names (e.g., blackbirds, shield fern, Steller's sea cow).

If you use an acronym, give the entity's *full* name the first time it is mentioned. Avoid excessive use of acronyms.

Use the 24-hour clock without a colon (e.g., 1830). Give dates as day-month-year. Use metric measures, except when quoting informal statements. For quantities less than 1, use an initial 0 ( $P = 0.95$ , not  $P = .95$ ).

Typographical conventions follow *Scientific Style and Format*, 6th edition, by the Style Manual Committee of the Council of Biology Editors; Cambridge University Press (1999).

## ORGANIZATION

**Articles** should contain the following sections, in this order: Title, Author(s), Authors' affiliations (including e-mail for corresponding author), Abstract, Key words, Introduction, Methods, Results, Discussion, Acknowledgments, Literature Cited, Tables, Figure legends, and Figures. **Other types of manuscript** may use a different organization (e.g., a review or report could contain sections on various locations); however, the same formats for Literature Cited, Tables, and Figures will apply.

**Abstract**—An abstract is required for longer articles and suggested for short ones. It should contain essential

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information from each section of the text, without statistics. One or more additional abstract(s) may be provided in languages other than English.

**Key words**—Five to 10 words for use in computerized searching. Species names in both Latin and English should be included.

**Introduction**—Present the aims and significance of the work, and place it in the context of pre-existing information. State hypotheses that are being tested, if any.

**Methods**—Describe the methods, location, time, and personnel of the study. Include statistical methods, if any.

**Results**—Present results that are pertinent to aims given in the Introduction. Where feasible, summarize information and give the full data in Tables or Figures. Give sample sizes and the significance levels of statistical tests. Literature citations normally should not be in the Results section.

**Discussion**—Summarize the results briefly, then evaluate the results, and develop their importance in relation to other work. Do not include primary results and statistical tests, which belong in Results.

**Citations in the text** should be “Surname year.” Two authors are “Surname and surname year”; 3 or more authors are “Surname et al. year” (but all authors should be given in the Literature Cited). E.g., (Pratt et al. 1987, Schreiber and Schreiber 1988). If appropriate, specify page number(s) in a book or long article (Pratt et al. 1987:32-34).

Use the “Name–Year” format for citations (common in ornithological journals), not the “Citation–Sequence” format (e.g., *Science*).

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## SYMPOSIA

**SHOREBIRDS IN MARINE ENVIRONMENTS.** Frank A. Pitelka (Editor). Proceedings of an International Symposium of the Pacific Seabird Group. Asilomar, California, January 1977. Published June 1979 in Studies in Avian Biology, Number 2. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**TROPICAL SEABIRD BIOLOGY.** Ralph W. Schreiber (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Honolulu, Hawaii, December 1982. Published February 1984 in Studies in Avian Biology, Number 8. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**MARINE BIRDS: THEIR FEEDING ECOLOGY AND COMMERCIAL FISHERIES RELATIONSHIPS.** David N. Nettleship, Gerald A. Sanger, and Paul F. Springer (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Seattle, Washington, January 1982. Published 1984 as Canadian Wildlife Service, Special Publication. *Out of print; available free of charge at* [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**THE USE OF NATURAL VS. MAN-MODIFIED WETLANDS BY SHOREBIRDS AND WATERBIRDS.** R. Michael Erwin, Malcolm C. Coulter, and Howard L. Cogswell (Editors). Proceedings of an International Symposium at the first joint meeting of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Colonial Waterbirds 9(2), 1986. \$12.00. *Order from:* Ornithological Societies of North America, PO Box 1897, Lawrence, Kansas 66044; phone (800) 627-0629; no online orders.

**ECOLOGY AND BEHAVIOR OF GULLS.** Judith L. Hand, William E. Southern, and Kees Vermeer (Editors). Proceedings of an International Symposium of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Published June 1987 in Studies in Avian Biology, Number 10. \$18.50. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**AUKS AT SEA.** Spencer G. Sealy (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published December 1990 in Studies in Avian Biology, Number 14. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**STATUS AND CONSERVATION OF THE MARBLED MURRELET IN NORTH AMERICA.** Harry C. Carter, and Michael L. Morrison (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published October 1992 in Proceedings of the Western Foundation of Vertebrate Zoology, Volume 5, Number 1. \$20.00. *Order from PSG Treasurer* (order form on last page), *or available free of charge at* [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**THE STATUS, ECOLOGY, AND CONSERVATION OF MARINE BIRDS OF THE NORTH PACIFIC.** Kees Vermeer, Kenneth T. Briggs, Ken H. Morgan, and Douglas Siegel-Causey (editors). Proceedings of a Symposium of the Pacific Seabird

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Group, Canadian Wildlife Service, and the British Columbia Ministry of Environment, Lands and Parks, Victoria, British Columbia, February 1990. Published 1993 as a Canadian Wildlife Service Special Publication, Catalog Number CW66-124-1993E. *Order free of charge from:* Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada.

**BIOLOGY OF MARBLED MURRELETS—INLAND AND AT SEA.** S. Kim Nelson and Spencer G. Sealy (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Seattle, Washington, February 1993. Published 1995 in *Northwestern Naturalist*, Volume 76, Number 1. \$12.00. *Order from PSG Treasurer* (order form on last page), or available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**BEHAVIOUR AND ECOLOGY OF THE SEA DUCKS.** Ian Goudie, Margaret R. Petersen and Gregory J. Robertson (editors). Proceedings of the Pacific Seabird Group Symposium, Victoria, British Columbia, 8-12 November 1995. A special publication compiled by the Canadian Wildlife Service for the Pacific Seabird Group. Published 1999 as Canadian Wildlife Service Occasional Paper number 100, catalog number CW69-1/100E. *Order free of charge from:* Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada, or available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**SEABIRD BYCATCH: TRENDS, ROADBLOCKS AND SOLUTIONS.** Edward F. Melvin and Julia K. Parrish (editors). Proceedings of an International Symposium of the Pacific Seabird Group, Blaine, Washington, 26-27 February 1999. Published 2001 by University of Alaska Sea Grant, Fairbanks, Alaska. Publication no. AK-SG-01-01. \$40.00. *Order from publisher.*

**BIOLOGY, STATUS, AND CONSERVATION OF JAPANESE SEABIRDS.** Nariko Oka (editor). Proceedings of an International Symposium of the Japanese Seabird Group and Pacific Seabird Group, Lihue, Hawaii, February 2001. Journal of the Yamashina Institute of Ornithology 33(2); Symposium (5 papers), pp 57-147, other papers pp. 148-213. In English with Japanese abstracts. \$75.00. *Order from PSG Treasurer* (order form on last page).

**OIL AND CALIFORNIA'S SEABIRDS.** Harry R. Carter (convener) and Anthony J. Gaston (editor). Proceedings of a Symposium of the Pacific Seabird Group, Santa Barbara, California, February 2002. Published 2003 in *Marine Ornithology* 31(1). Available free of charge at [www.marineornithology.org](http://www.marineornithology.org)

**THE BIOLOGY AND CONSERVATION OF THE AMERICAN WHITE PELICAN.** Daniel W. Anderson, D. Tommy King, and John Coulson (editors). Proceedings of a Symposium of the Pacific Seabird Group. *Waterbirds*, Volume 28. Special Publication 1, 2005. Published by the Waterbird Society. \$15.00. *Order from PSG Treasurer* (order form on last page).

**BIOLOGY AND CONSERVATION OF XANTUS'S MURRELET.** Harry R. Carter, Spencer G. Sealy, Esther E. Burkett, and John F. Piatt (editors). Proceedings of a symposium of the Pacific Seabird Group, Portland, Oregon, January 2005. Published 2005 in *Marine Ornithology* 33(2):81-159. Available free of charge at [www.marineornithology.org](http://www.marineornithology.org)

**SEABIRDS AS INDICATORS OF MARINE ECOSYSTEMS.** John F. Piatt and William J. Sydeman (editors). Proceedings of an International Symposium of the Pacific Seabird Group, Girdwood, Alaska, February 2006. Published 2007 in *Marine Ecology Progress Series* Volume 352:199-309. Available free of charge at <http://www.int-res.com/abstracts/meps/v352/#theme>

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## TECHNICAL PUBLICATIONS

**EXXON VALDEZ OIL SPILL SEABIRD RESTORATION WORKSHOP.** Kenneth I. Warheit, Craig S. Harrison, and George J. Divoky (editors). Exxon Valdez Restoration Project Final Report, Restoration Project 95038. PSG Technical Publication Number 1. 1997. Available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**METHODS FOR SURVEYING MARBLED MURRELETS IN FORESTS: A REVISED PROTOCOL FOR LAND MANAGEMENT AND RESEARCH.** Pacific Seabird Group, Marbled Murrelet Technical Committee. PSG Technical Publication Number 2. 2003. Available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

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